OfficeConnect®
ADSL Wireless 54 Mbps 11g Firewall Router

User Guide

WL-552

3CRWDR101A-75
3CRWDR101B-75

http://www.3Com.com/

Part No. 10015091 Rev. AA
Published March 2006

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ENVIRONMENTAL STATEMENT

It is the policy of 3Com Corporation to be environmentally-friendly in all operations. To uphold our policy, we are committed to:

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Conserving energy, materials and natural resources in all operations.

Reducing the waste generated by all operations. Ensuring that all waste conforms to recognized environmental standards. Maximizing the recyclable and reusable content of all products.

Ensuring that all products can be recycled, reused and disposed of safely.

Ensuring that all products are labelled according to recognized environmental standards.

Improving our environmental record on a continual basis.

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3Com products do not contain any hazardous or ozone-depleting material.

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The documentation for this product is printed on paper that comes from sustainable, managed forests; it is fully biodegradable and recyclable, and is completely chlorine-free. The varnish is environmentally-friendly, and the inks are vegetable-based with a low heavy-metal content.

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About This Guide

This guide describes how to install and configure the 3Com OfficeConnect© ADSL Wireless 54 Mbps 11g Firewall Router (3CRWDR101A-75/3CRWDR101B-75).

This guide is intended for use by those responsible for installing and setting up network equipment; consequently, it assumes a basic working knowledge of LANs (Local Area Networks) and Internet Routers.

If a release note is shipped with the 3Com OfficeConnect ADSL Wireless 54 Mbps 11g Firewall Router and contains information that differs from the information in this guide, follow the information in the release note.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) on the 3Com World Wide Web site:

http://www.3Com.com

Naming Convention

Throughout this guide, the 3Com OfficeConnect© ADSL Wireless 54 Mbps 11g Firewall Router is referred to as the "Router".

Category 3 and Category 5 Twisted Pair Cables are referred to as Twisted Pair Cables throughout this guide.

Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions.
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
	Warning	Information that alerts you to potential personal injury.

Table 2 Text Conventions

Convention	Description
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del
Words in *italics*	Italics are used to: ■ Emphasize a point. ■ Denote a new term at the place where it is defined in the text. ■ Identify menu names, menu commands, and software button names. Examples: From the *Help* menu, select *Contents*. Click *OK*.

Feedback About This User Guide

Your suggestions are very important to us. They will help make our documentation more useful to you. Please e-mail comments about this document to 3Com at:

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Please include the following information when commenting:

- Document title
- Document part number (on the title page)
- Page number (if appropriate)

Example:

- 3Com OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router User Guide
- Part Number 10015091 Rev. AA
- Page 24

Do not use this e-mail address for technical support questions. For information about contacting Technical Support, please refer to Appendix C.

Related Documentation

In addition to this guide, each Router document set includes one Installation Guide. This guide contains the instructions you need to install and configure your Router.

1 INTRODUCING THE ROUTER

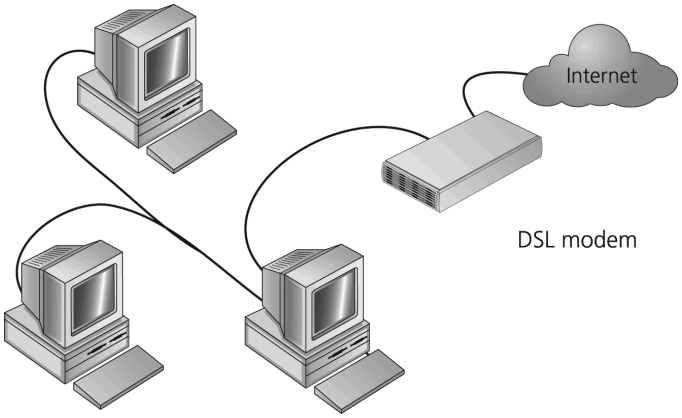
Welcome to the world of networking with 3Com®. In the modern business environment, communication and sharing information is crucial. Computer networks have proved to be one of the fastest modes of communication but, until recently, only large businesses could afford the networking advantage.

OfficeConnect ADSL Wireless 54 Mbps 11g Firewall Router

The OfficeConnect ADSL Wireless 54 Mbps 11g Firewall Router is designed to provide a cost-effective means of sharing a single broadband Internet connection amongst several wired and wireless computers. The Router also provides protection in the form of an electronic "firewall" preventing anyone outside of your network from seeing your files or damaging your computers. The Router can also prevent your users from accessing Web sites which you find unsuitable.

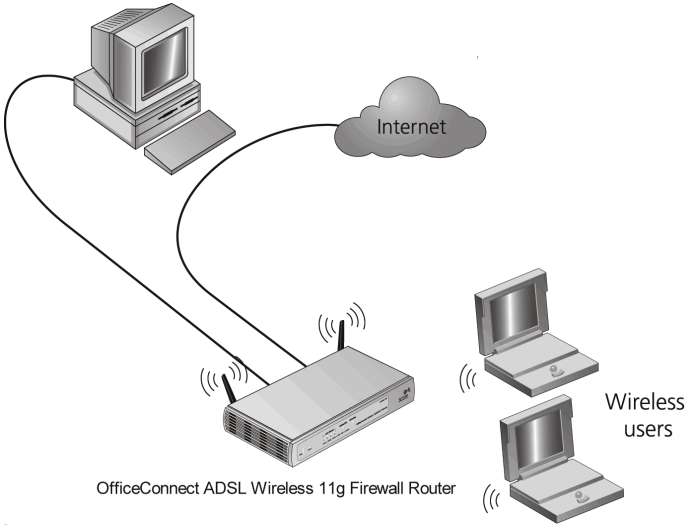
Figure 1 shows an example network without a Router. In this network, only one computer is connected to the Internet. This computer must always be powered on for the other computers on the network to access the Internet.

Figure 1 Example Network Without a Router



When you use the Router in your network (Figure 2), it becomes your connection to the Internet. Connections can be made directly to the Router, or to an OfficeConnect Switch or Hub, expanding the number of computers you can have in your network.

Figure 2 Example Network Using a Firewall Router



Router Advantages

The advantages of the Router include:

- Shared Internet connection for both wired and wireless computers
- High speed 802.11g wireless networking
- No need for a dedicated, "always on" computer serving as your Internet connection
- Cross-platform operation for compatibility with Windows, Unix and Macintosh computers
- Easy-to-use, Web-based setup and configuration
- Provides centralization of all network address settings (DHCP)
- Acts as a Virtual server to enable remote access to Web, FTP, and other services on your network
- Security — Firewall protection against Internet hacker attacks and encryption to protect wireless network traffic

Package Contents

The Router kit includes the following items:

- One OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router
- One power adapter for use with the Router
- Four rubber feet
- One Telephone Cable
- One CD-ROM containing this User Guide
- Installation Guide
- One Support and Safety Information Sheet
- One Warranty Flyer

If any of these items are missing or damaged, please contact your retailer.

Minimum System and Component Requirements

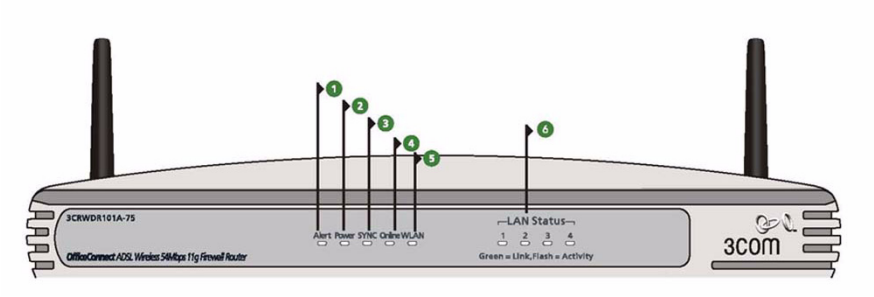
Your Router requires that the computer(s) and components in your network be configured with at least the following:

- A computer with an operating system that supports TCP/IP networking protocols (for example Windows 98/NT/Me/2000/XP, Unix, Mac OS 8.5 or higher).
- An Ethernet 10 Mbps or 10/100 Mbps NIC for each computer to be connected to the four-port switch on your Router.
- An 802.11b or 802.11g wireless NIC.
- An active ADSL subscription and connection.
- A Web browser that supports JavaScript, such as Netscape 4.7 or higher, Internet Explorer 5.0 or higher, or Mozilla 1.2.1 or higher.

Physical Features

The front panel of the Router contains a series of indicator lights (LEDs) that help describe the state of various networking and connection operations.

Figure 3 Router - Front Panel



1 Alert LED

Orange

Fast flash during self test. If self test fails the LED will remain on.
Fast flash during software upgrade.
Fast flash for software reset to the factory defaults.
Fast flash for hardware reset to the factory defaults.
The LED is on for 2 seconds when the firewall detects a hacker attack.

2 Power LED

Green

Indicates that the Router is powered on, and the boot up is successful.

3 SYNC LED

Green

If the LED is on it indicates that DSL connection is present. This LED flashes during configuration at power up.

4 Online LED

Green

If this LED is on, your username/password has been authenticated successfully with your ISP.

5 Wireless LAN (WLAN) Status LED

Green

If the LED is on it indicates that wireless networking is enabled. If the LED is flashing, the link is OK and data is being transmitted or received. If the LED is off, the Wireless LAN has been disabled in the Router, or there is a problem. Refer to Chapter 6 "Troubleshooting".

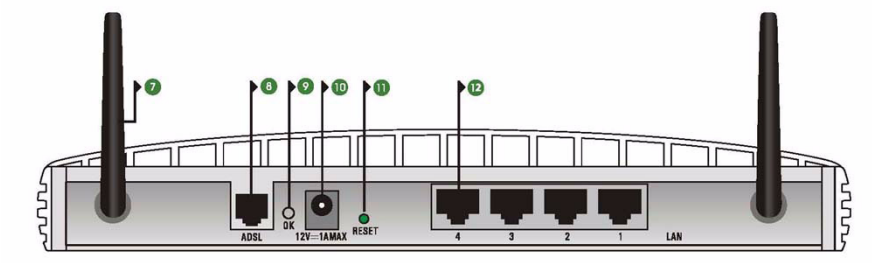
6 LAN Status LEDs

Green

If the LED is on, the link between the port and the next piece of network equipment is OK. If the LED is flashing, the link is OK and data is being transmitted or received. If the LED is off, nothing is connected, or the connected device is switched off, or there is a problem with the connection (refer to Chapter 6 "Troubleshooting"). The port will automatically adjust to the correct speed and duplex.

The rear panel (Figure 4) of the Router contains four LAN ports, one ADSL port, a reset button, a power OK LED, and a power adapter socket.

Figure 4 Router - Rear Panel



7 Wireless Antennae

The antennae should be placed in a 'V' position when initially installed.

CAUTION: *Do not force the antennae beyond their mechanical stops. Rotating the antennae further may cause damage.*

8 ADSL Port

Using the RJ-11 cable provided, you should connect your Router to the telephone socket via a splitter.

9 Power OK LED

Indicates the Router is powered on, the power adapter is working properly.

10 Power Adapter Socket

Only use the power adapter that is supplied with this Router. Do not use any other adapter.

11 Reset Button

If you want to reset your Router to factory default settings, and cannot access the web management interface (for example, due to a lost password), then you may use this button. Refer to "Forgotten Password and Reset to Factory Defaults" on page 104 for further details.

12 Ethernet Ports

Using suitable RJ-45 cables, you can connect your Router to a computer, or to any other piece of equipment that has an Ethernet connection (for example, a hub or a switch). These ports have an automatic MDI/MDIX feature, which means either straight-through or a crossover cable can be used.

2 INSTALLING THE ROUTER

Introduction

This chapter will guide you through a basic installation of the Router, including:

- Connecting the Router to the Internet.
- Connecting the Router to your network.
- Setting up your computers for networking with the Router.

Safety Information

Please note the following:

WARNING: *Please read the "Safety Information" section in Appendix C before you start.*

VORSICHT: *Bitte lesen Sie den Abschnitt "Wichtige Sicherheitshinweise" sorgfältig durch, bevor Sie das Gerät einschalten.*

AVERTISSEMENT: *Veuillez lire attentivement la section "Consignes importantes de sécurité" avant de mettre en route.*

Positioning the Router

You should place the Router in a location that:

- is conveniently located for connection to the telephone socket.
- is centrally located to the wireless computers that will connect to the Router. A suitable location might be on top of a high shelf or similar furniture to optimize wireless connections to computers in both horizontal and vertical directions, allowing wider coverage.
- allows convenient connection to the computers that will be connected to the four LAN ports on the rear panel, if desired.
- allows easy viewing of the front panel LED indicator lights, and access to the rear panel connectors, if necessary.

When positioning your Router, ensure:

- It is out of direct sunlight and away from sources of heat.
- Cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.
- Water or moisture cannot enter the case of the unit.
- Air flow around the unit and through the vents in the side of the case is not restricted. 3Com recommends you provide a minimum of 25 mm (1 in.) clearance.

Using the Rubber Feet

Use the four self-adhesive rubber feet to prevent your Router from moving around on your desk or when stacking with flat top units. Only stick the feet to the marked areas at each corner of the underside of your Router.

Wall Mounting

There are two slots on the underside of the Router that can be used for wall mounting.

When wall mounting the unit, ensure that it is within reach of the power outlet.

You will need two suitable screws to wall mount the unit. To do this:

1. Ensure that the wall you use is smooth, flat, dry and sturdy and make two screw holes which are 150 mm (5.9 in.) apart.
2. Fix the screws into wall, leaving their heads 3 mm (0.12 inch) clear of the wall surface.
3. Remove any connections to the unit and locate it over the screw heads. When in line, gently push the unit on to the wall and move it downwards to secure.

When making connections, be careful not to push the unit up and off the wall.

***CAUTION**: Only wall mount single units, do not wall mount stacked units.*

Powering Up the Router

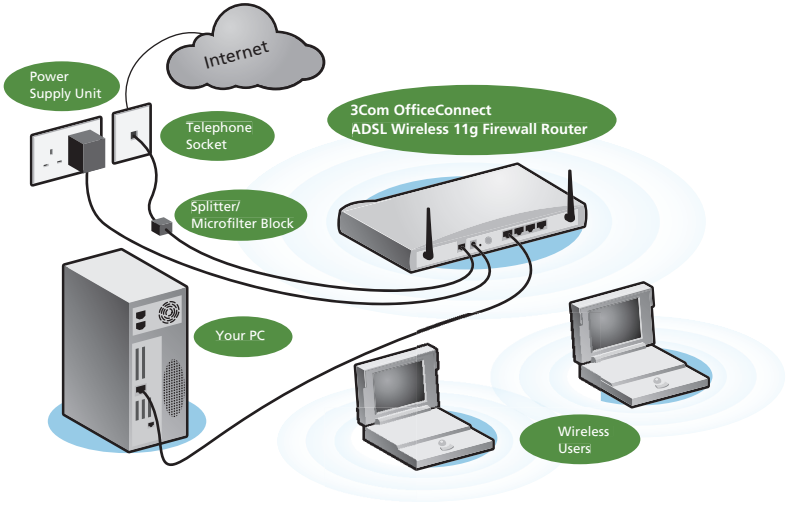
To power up the Router:

1. Plug the power adapter into the power adapter socket located on the back panel of the Router.
2. Plug the power adapter into a standard electrical wall socket.
3. Press the power button located on the back of the Router.

Connecting the Router

The first step for installing your Router is to physically connect it to the telephone socket and then connect it to a computer in order to be able to access the Internet. See Figure 5:

Figure 5 Connecting the Router



1. Run the provided telephone cable from the wall jack providing ADSL service to the ADSL port on your Router. When inserting an ADSL RJ-11 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated. If you are using splitterless ADSL service, add low-pass filters between the ADSL wall jack and your telephones. (These filters pass voice signals through but filter data signals out.)
2. Then:
   - If you are using a full-rate (G.dmt) connection, your service provider will attach the outside ADSL line to a data/voice splitter. In this case

you can connect your phones and computer directly to the splitter as shown below (Figure 6):

or

- If you are using a splitterless (G.lite) connection, then your service provider will attach the outside ADSL line directly to your phone system. In this case you can connect your phones and computer directly to the incoming ADSL line, but you will have to add low-pass filters to your phones as shown below (Figure 7)

Figure 6 Installing with a splitter

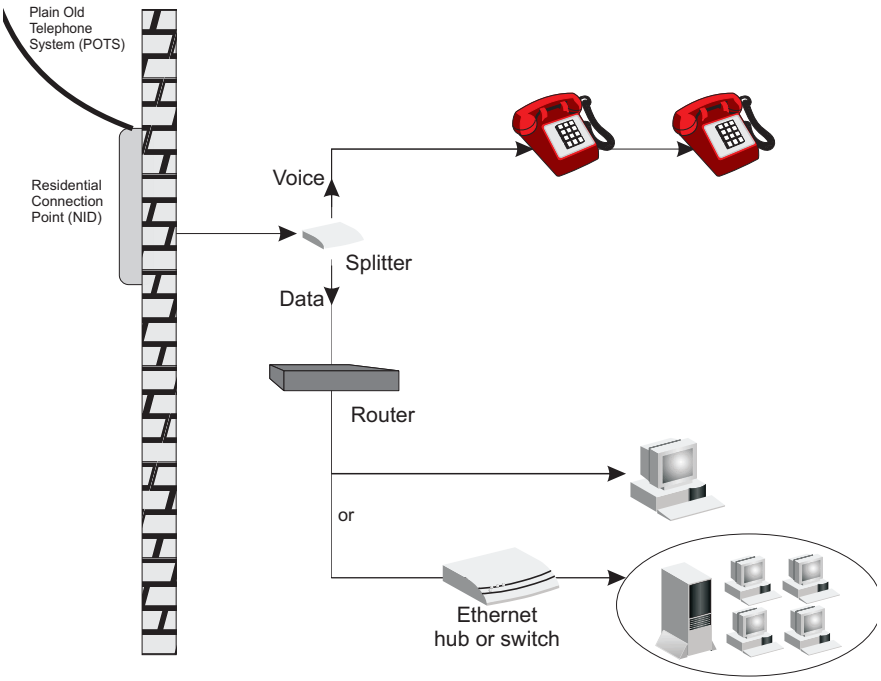
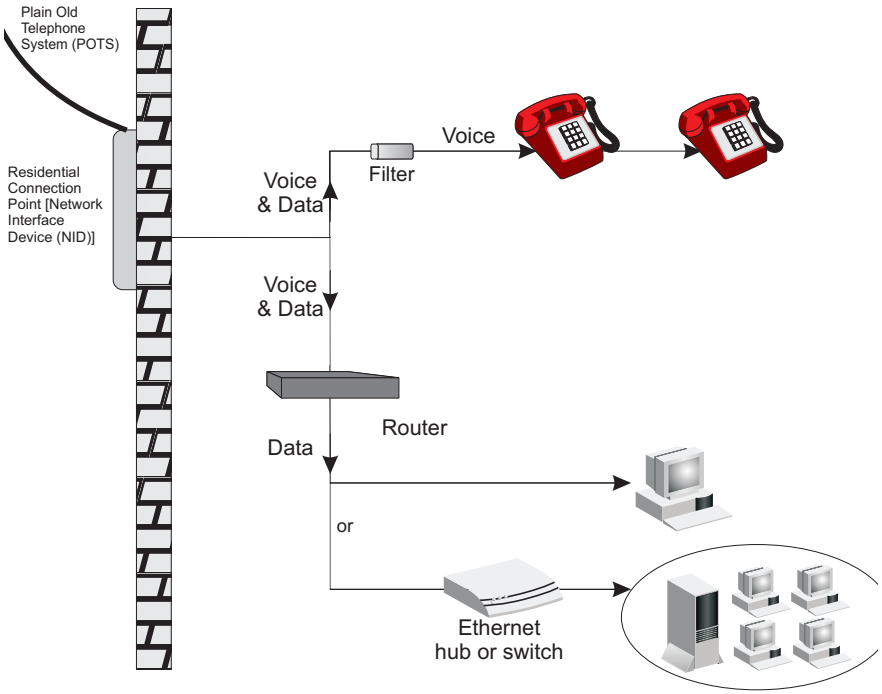


Figure 7 Installing without a splitter



You have now completed the hardware installation of your Router. Next you need to set up your computers so that they can make use of the Router to communicate with the Internet.

3Com recommends that you perform the initial Router configuration from a computer that is directly connected to one of the LAN ports.

If you configure the Router from a wireless computer, note that you may lose contact with the Router if you change the wireless configuration.

To communicate wirelessly with your Router, your wireless NIC should be set as follows:

- Encryption — none
- SSID — 3Com
- Channel — 11

3 SETTING UP YOUR COMPUTERS

The Router has the ability to dynamically allocate network addresses to the computers on your network, using DHCP. However, your computers need to be configured correctly for this to take place. To change the configuration of your computers to allow this, follow the instructions in this chapter.

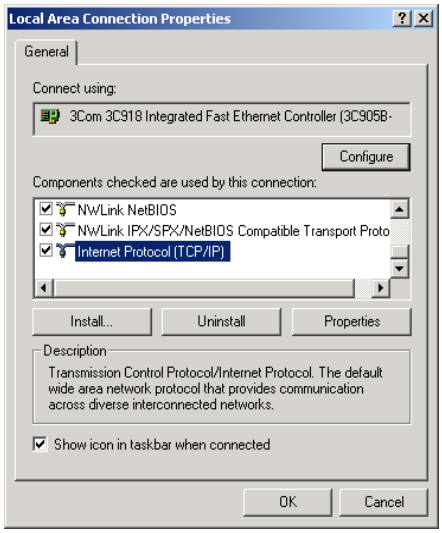
Obtaining an IP Address Automatically

Windows 2000

If you are using a Windows 2000-based computer, use the following procedure to change your TCP/IP settings:

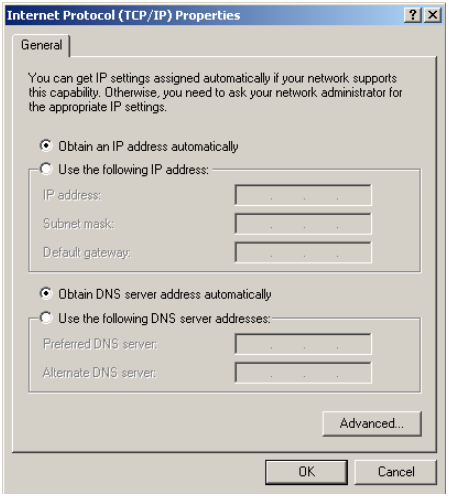
1. From the Windows *Start* Menu, select *Settings* > *Control Panel*.
2. Double click on *Network and Dial-Up Connections*.
3. Double click on *Local Area Connection*.
4. Click on *Properties*.
5. A screen similar to Figure 8 should be displayed. Select *Internet Protocol TCP/IP* and click on *Properties*.

Figure 8 Local Area Properties Screen



6 Ensure that the options *Obtain an IP address automatically*, and *Obtain DNS server address automatically* are both selected as shown in Figure 9. Click *OK*.

Figure 9 Internet Protocol (TCP/IP) Properties Screen



7 Restart your computer.

Windows XP

1. From the Windows *Start* Menu, select *Control Panel*.
2. Click on *Network and Internet Connections*.
3. Click on the *Network Connections* icon.
4. Double click on *LAN* or *High Speed Connection* icon. A screen titled *Local Area Connection Status* will appear.
5. Select *Internet Protocol TCP/IP* and click on *Properties*.
6. Ensure that the options *Obtain an IP address automatically*, and *Obtain DNS servers automatically* are both selected. Click *OK*.
7. Restart your computer.

Windows 98/ME

1. From the Windows *Start* Menu, select *Settings* > *Control Panel*.
2. Double click on *Network*. Select the *TCP/IP* item for your network card and click on *Properties*.
3. In the TCP/IP dialog, select the *IP Address* tab, and ensure that *Obtain IP address automatically* is selected. Click *OK*.

Macintosh

If you are using a Macintosh computer, use the following procedure to change your TCP/IP settings:

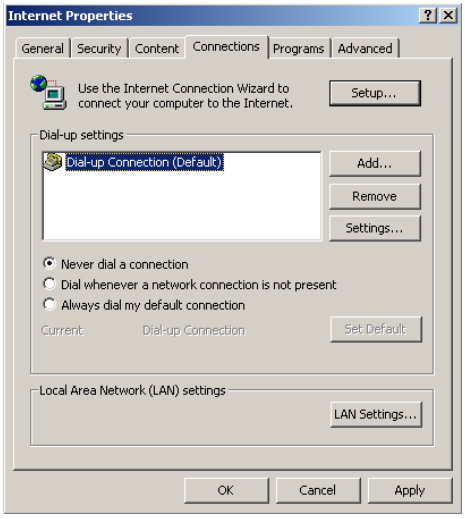
1. From the desktop, select *Apple Menu*, *Control Panels*, and *TCP/IP.*
2. In the *TCP/IP* control panel, set *Connect Via:* to *Ethernet*.
3. In the TCP/IP control panel, set *Configure:* to *Using DHCP Server.*
4. Close the *TCP/IP* dialog box, and save your changes.
5. Restart your computer.

Disabling PPPoE and PPTP Client Software

If you have PPPoE client software installed on your computer, you will need to disable it. To do this:

1. From the Windows *Start* Menu, select *Settings* > *Control Panel*.
2. Double click on *Internet* Options.
3. Select the *Connections* Tab. A screen similar to Figure 10 should be displayed.
4. Select the *Never dial a connection* option.

Figure 10 Internet Properties Screen



You may want to remove the PPPoE client software from your computer to free resources, as it is not required for use with the Router.

Disabling Web Proxy

Ensure that you do not have a web proxy enabled on your computer.

Go to the *Control Panel* and click on *Internet Options*. Select the *Connections* tab and click *LAN Settings* at the bottom. Make sure that the *Use Proxy Server* option is unchecked.

4 RUNNING THE SETUP WIZARD

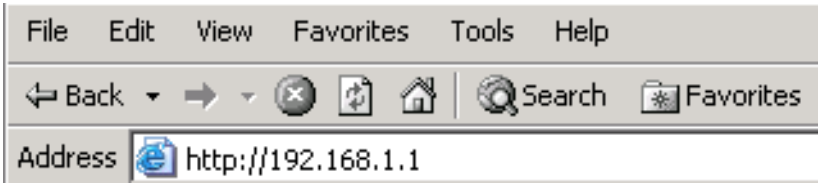
Accessing the Setup Wizard

The Router setup program is Web-based, which means that it is accessed through your Web browser (Netscape Navigator 4.7 or higher, Internet Explorer 5.0 or higher, or Mozilla 1.2.1 or higher).

To use the Setup Wizard:

1. Ensure that you have at least one computer connected to the Router. Refer to Chapter 2 for details on how to do this.
2. Launch your Web browser on the computer.
3. Enter the following URL in the location or address field of your browser: **`http://192.168.1.1`** (Figure 11). The Login screen displays.

Figure 11 Web Browser Location Field (Factory Default)



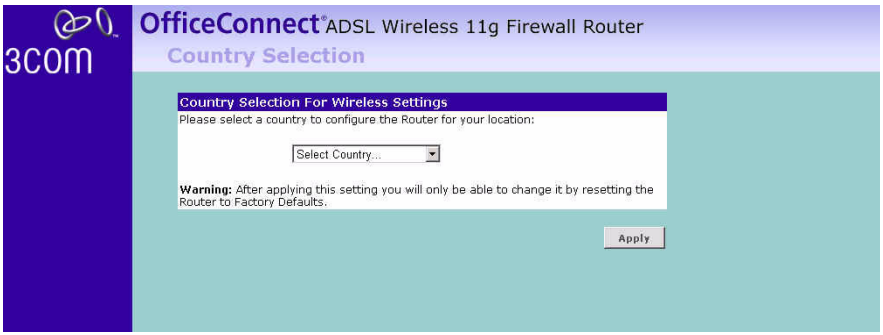
4 To log in as an administrator, enter the password (the default password is *admin*) in the *System Password* field and click *Log in* (Figure 12).

Figure 12 Router Login Screen

5 When you have logged in,

- if you are logging in for the first time, the Country Selection screen will appear (Figure 13). Please select the country form the drop-down menu, and click *Apply*.

Figure 13 Country Selection Screen



The Wizard will then launch automatically (refer to Figure 16). You will be guided step by step through a basic setup procedure.

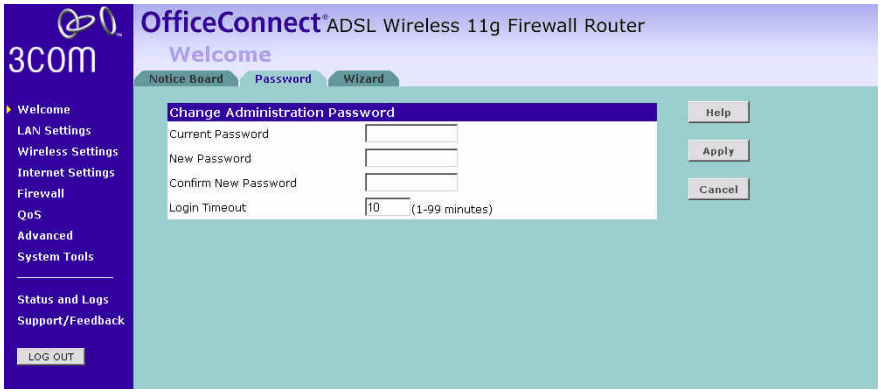
- if the Router has been configured previously, the *Welcome* screen will appear (Figure 14). There are three tabs: Notice Board, Password and Wizard.

Figure 14 Welcome Screen

- Go to the *Notice Board* tab to see the current software information. To view the Web help, click the *Help* button.
- Go to the *Password* tab to change the password (Figure 15).
- Go to the *Wizard* tab to do a quick setup of the Router (Figure 16).

The password screen allows you to change the current password and set the login time limit to the Router's management interface.

Figure 15 Password Screen



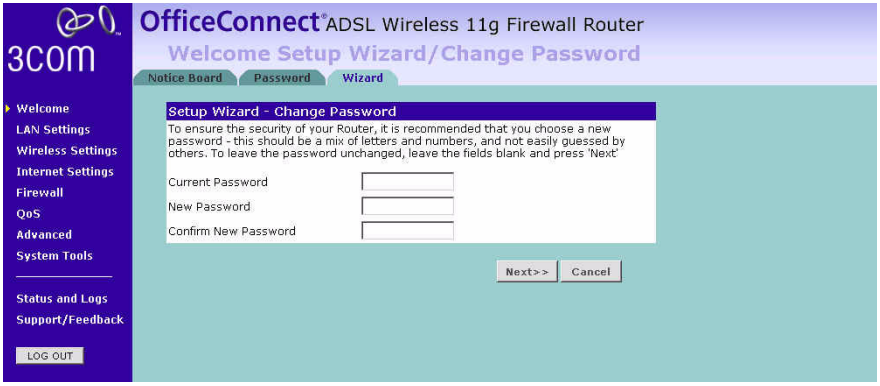
1. To change the current password, enter the password in the *Current Password* field.
2. Enter the new password in the *New Password* field, and enter it again in the *Confirm New Password* field.

3 Enter the time period in *Login Timeout* to set a maximum period of time for which the login session is maintained during inactivity (Default: 10 minutes).

Setup Wizard - Change Password

To ensure the security of your Router, it is recommended that you choose a new password - this should be a mix of letters and numbers, and not easily guessed by others. To leave the current password unchanged, leave the fields blank and click *Next*.

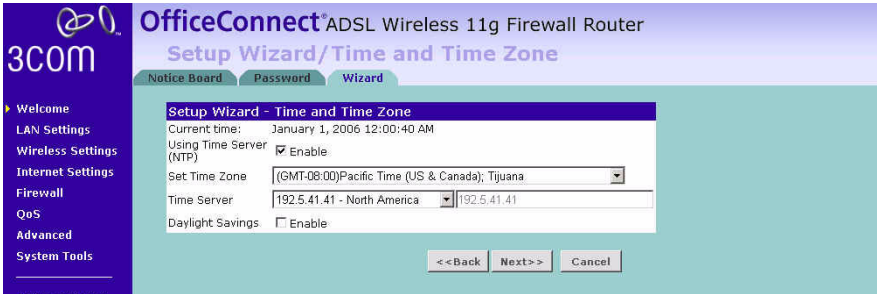
Figure 16 Change Password Screen



Setup Wizard - Time and Time Zone

The *Time and Time Zone* screen allows you to set up the time for the Router.

Figure 17 Time and Time Zone Screen



1 If you want to automatically synchronize the Router with a public time server, check the *Enable* box in the *Using Time Server NTP* field.

2 Select the time zone in the *Set Time Zone* drop-down menu.

3 Select the desired servers from the *Time Server* drop-down menu.

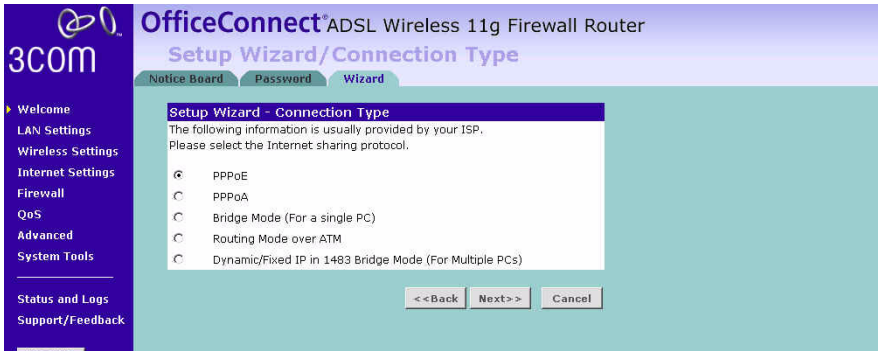
4 Check the *Enable* box in the *Daylight Savings* field, if daylight savings applies to your area.

5 Click *Next*.

Setup Wizard - Connection Type

The *Connection Type* screen allows you to set up the Router for the type of Internet connection you have. Before setting up your connection type, have your account information from your ISP ready.

Figure 18 Connection Type Screen



Select a DSL mode from the following:

- *PPPoE* — PPP over Ethernet, providing routing for multiple PCs, see page 32
- *PPPoA* — PPP over ATM, providing routing for multiple PCs, see page 33
- *Bridge Mode (for a single PC)* — RFC1483 Bridged Mode, for single PCs only, see page 34
- *Routing Mode over ATM* — RFC1483 Routed Mode, for multiple PCs, see page 34
- *Dynamic/Fixed IP in 1483 Bridge Mode (for multiple PCs),* see page 35

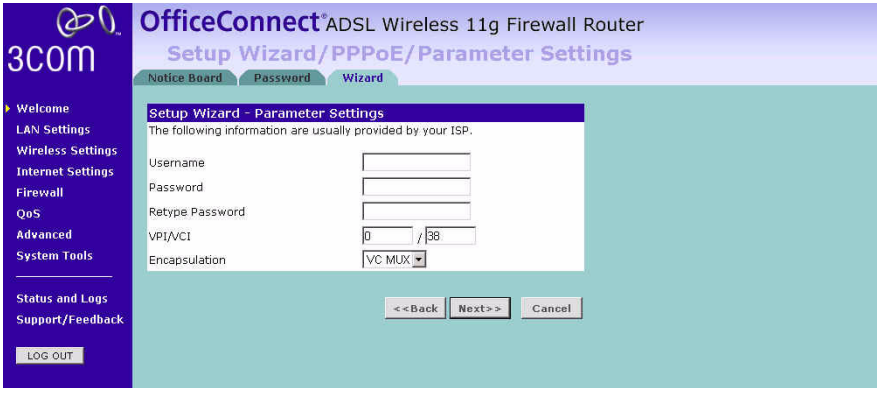
and click *Next*.

For further information on selecting a mode see *"Internet Settings" on page 54*.

PPPoE Mode

To set up the Router for use with a PPP over Ethernet (PPPoE) connection, use the following procedure:

Figure 19 PPPoE Screen

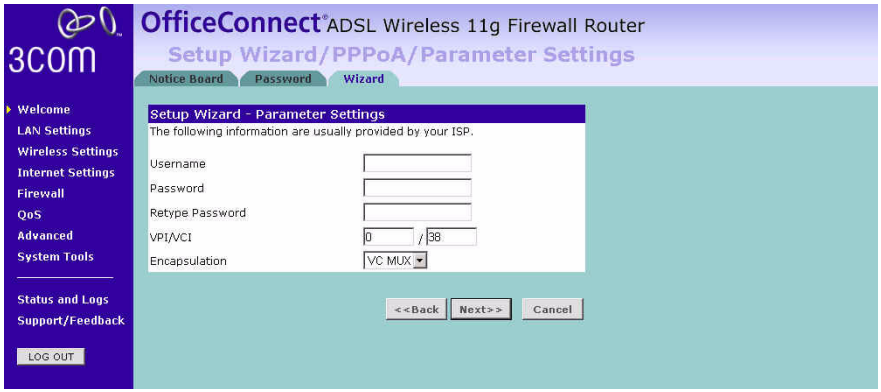


1. Enter your user name in the *Username* field.
2. Enter your password in the *Password* field.
3. Re-type your password in the *Retype Password* field.
4. Enter your VPI and VCI information in the *VPI/VCI* fields.
5. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.
6. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 24).

PPPoA Mode

To set up the Router for use with a PPP over ATM (PPPoA) connection, use the following procedure:

Figure 20 PPPoA Screen

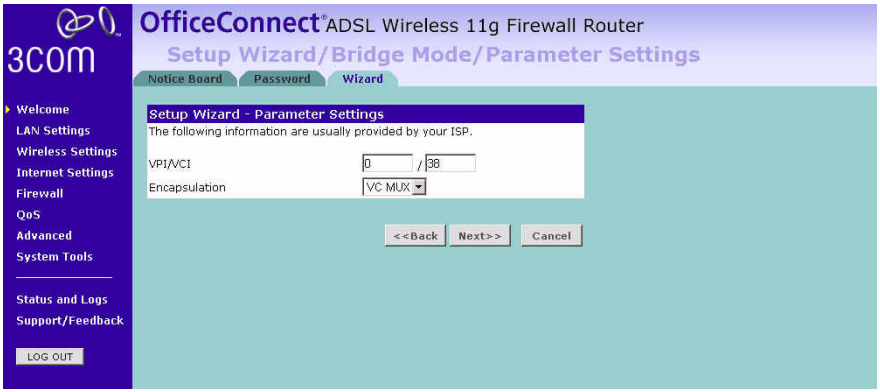


1. Enter your user name in the *Username* field.
2. Enter your password in the *Password* field.
3. Re-type your password in the *Retype Password* field.
4. Enter your VPI and VCI information in the *VPI/VCI* fields.
5. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.
6. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 24).

Bridge Mode (for a single PC)

To set up the Router for use with an RFC1483 bridged connection, use the following procedure:

Figure 21 Bridged Mode Screen



1 Enter your VPI and VCI information in the *VPI/VCI* fields.

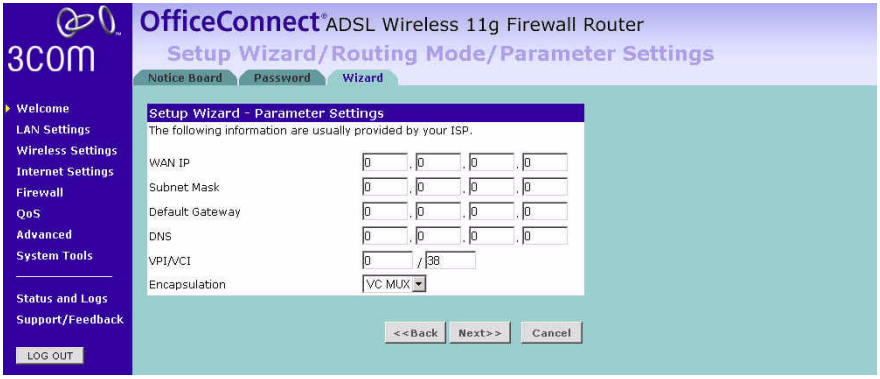
2 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.

3 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 24).

Routing Mode over ATM

To set up the Router for use with an RFC1483 routed connection, use the following procedure:

Figure 22 Routing Mode Screen

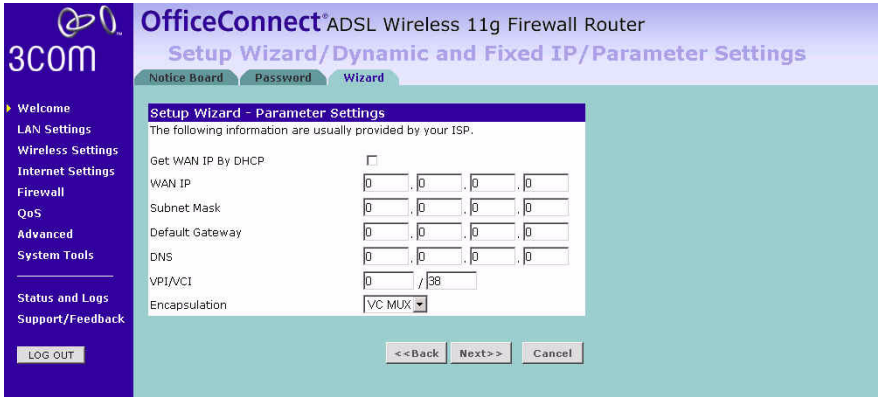


1. Enter your Internet IP address in the *WAN IP* field.
2. Enter the subnet mask in the *Subnet Mask* field.
3. Enter the default gateway IP address in the *Default Gateway* field.
4. Enter the DNS address in the *DNS* field.
5. Enter your VPI and VCI information in the *VPI/VCI* fields.
6. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.
7. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 24).

Dynamic/Fixed IP in 1483 Bridge Mode (For Multiple PCs)

For bridge mode to work, you need to assign an IP address to the Router. You can either configure the Router to obtain an IP address automatically from a DHCP server or assign a fixed or static IP address to it.

Figure 23 Dynamic/Fixed IP for Bridge Mode Screen



To obtain an IP address automatically from a DHCP server:
Check the *Get WAN IP By DCHP* checkbox, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 24).

To assign a fixed IP address:

1 Enter your Internet IP address in the *WAN IP* field.

2 Enter the subnet mask in the *Subnet Mask* field.

3 Enter the default gateway IP address in the *Default Gateway* field.

4 Enter the DNS address in the *DNS* field.

5 Enter your VPI and VCI information in the *VPI/VCI* text boxes.

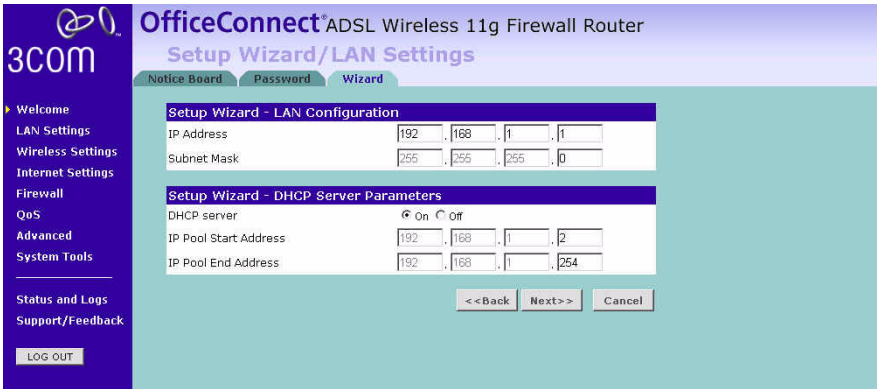
6 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.

7 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 24).

Setup Wizard - LAN Settings

The LAN Settings screen allows you to set the default IP address and DHCP client IP range for the Router.

Figure 24 The LAN Settings Screen



1 To change the Router's default IP address, enter the new IP address in the *IP Address* field, and then enter the subnet mask in the *Subnet Mask* field.

2 Select the *On/Off* button to turn on/turn off the DHCP function in the *DHCP Server* field.

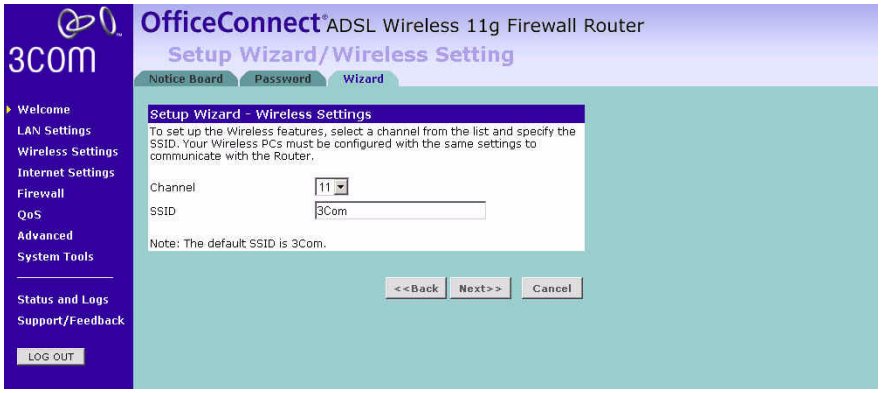
3 Enter the client IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields.

4 Click *Next*. The Wireless Settings screen will be displayed (refer to Figure 25).

Setup Wizard - Wireless Settings

The Wireless Settings screen allows you to set up the SSID and radio channel used for the wireless connection.

Figure 25 Wireless Settings Screen

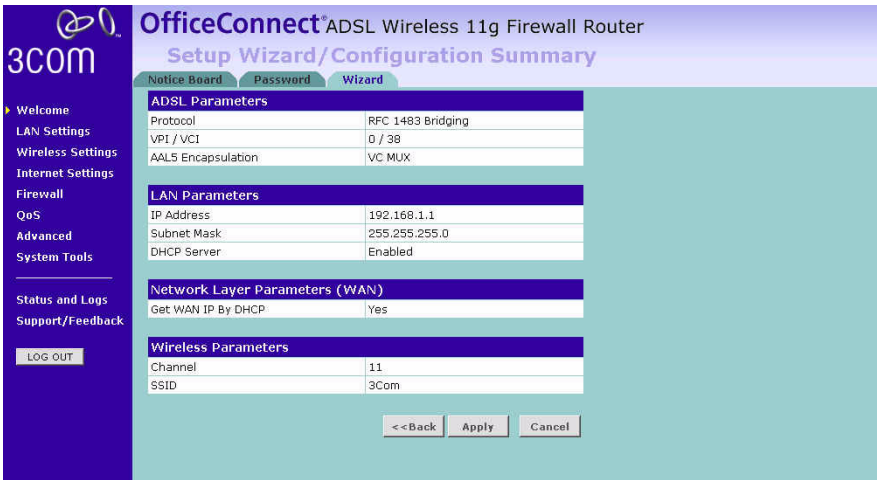


1. Select the channel you want to use from the *Channel* drop-down menu.
2. Specify the SSID to be used by your Wireless Network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network a unique name.

Setup Wizard - Configuration Summary

When you have completed the Setup Wizard, a configuration summary will appear. Verify the configuration information of the Router and then click *Apply* to save your settings. 3Com recommends that you print out this page for your records.

Figure 26 Configuration Summary Screen



Your Router is now configured and ready for use.

See Chapter 5 for a detailed description of the Router configuration.

5 CONFIGURING THE ROUTER

Navigating Through the Router Configuration screens

This chapter describes all the screens available through the Router configuration screens, and is provided as a reference. To get to the configuration screens, enter the Router's default IP in the location bar of your browser. The default IP is **`http://192.168.1.1`**.

However, if you changed the Router LAN IP address during initial configuration, use the new IP address instead. Enter your password to login to the management interface. (The default password is *admin*).

Main Menu

The main menu is located on the left side, as shown in Figure 27. When you click on an item from the main menu, the corresponding screen will then appear in the center.

Welcome Screen

The *Welcome* screen shows the current software information.

Status

Figure 27 Welcome Screen

LAN Settings

Your Router is equipped with a DHCP server that will automatically assign IP addresses to each computer on your network. The factory default settings for the DHCP server will work with most applications. If you need to make changes to the settings, you can do so.

The LAN settings screen allows you to:

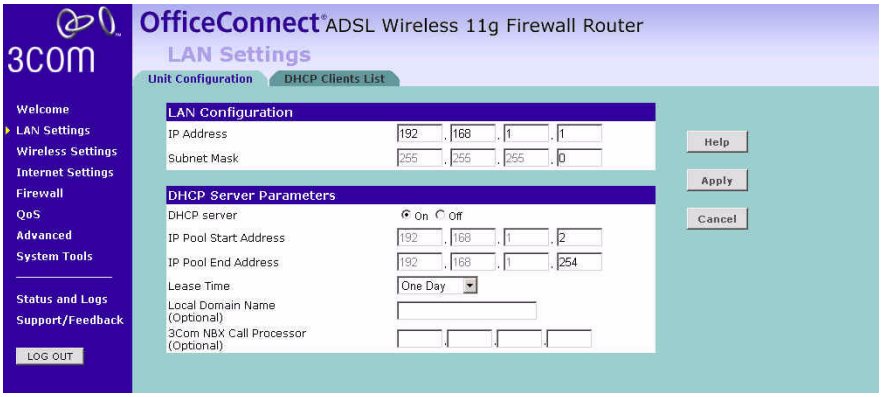
- Change the default IP address of the Router. The default IP is 192.168.1.1
- Change the Subnet Mask. The default setting is 255.255.255.0
- Enable/Disable the DHCP Server Function. The default is ON (Enabled).
- Specify the Starting and Ending IP Pool address. The default is Starting: 2 / Ending: 254.
- Specify the IP address Lease Time. The default is Half day.
- Specify a local Domain Name. The default is NONE.
- Specify the IP address of 3Com NBX call processor.

The Router will also provide a list of all client computers connected to the Router.

LAN Settings

The LAN Settings screen is used to specify the LAN IP address of your Router, and to configure the DHCP server.

Figure 28 LAN Settings Screen

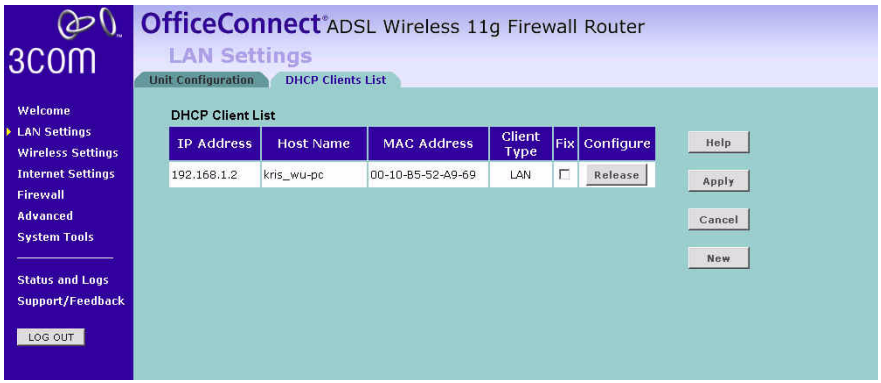


1. Enter the Router's *IP Address* and *Subnet Mask* in the appropriate fields. The default IP address is 192.168.1.1.
2. If you want to use the Router as a DHCP Server, select *On* in the *DHCP Server* field.
3. Enter the IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields.
4. Specify the DHCP Lease time by selecting the required value from the *Lease Time* drop-down menu. The lease time is the length of time the DHCP server will reserve the IP address for each computer.
5. Specify the Local Domain Name for your network (this step is optional).
6. Enter the IP address of the NBX Call Processor in the *3Com NBX Call Processor* field (this step is optional).
7. Check all of your settings, and then click *Apply*.

DHCP Clients List

The DHCP Clients List provides details on the devices that have received IP addresses from the Router. The list is only created when the Router is set up as a DHCP server. A maximum of 253 clients can be connected to the Router.

Figure 29 DHCP Clients List Screen

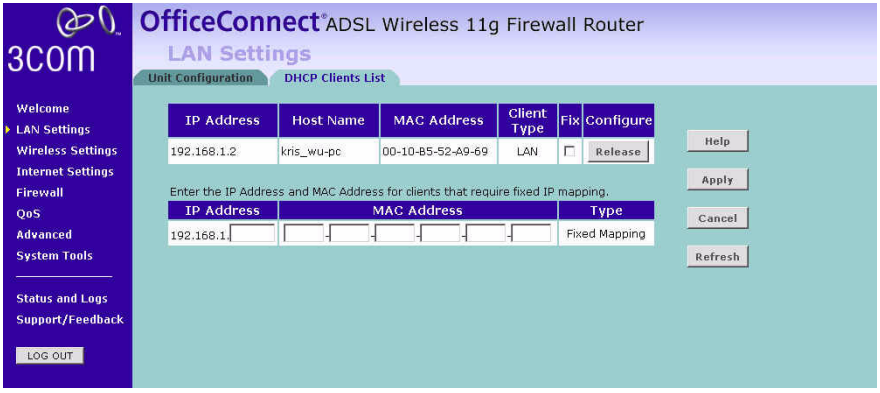


For each device that is connected to the LAN, the following information is displayed:

- *IP address* — The Internet Protocol (IP) address issued to the client machine.

- *Host Name* — The client machine's host name, if configured.
- *MAC Address* — The Media Access Control (MAC) address of the client's network card.
- *Client Type* — Whether the client is connected to the Router by wired or wireless connection.
- Check the *Fix* checkbox to permanently fix the IP address.
- Click *Release* to release the displayed IP address.
- Click *New* to allocate an IP address to a MAC address (refer to Figure 30). Enter the required details and click *Apply* to save your settings.

Figure 30 Fixed Mapping Clients List Screen



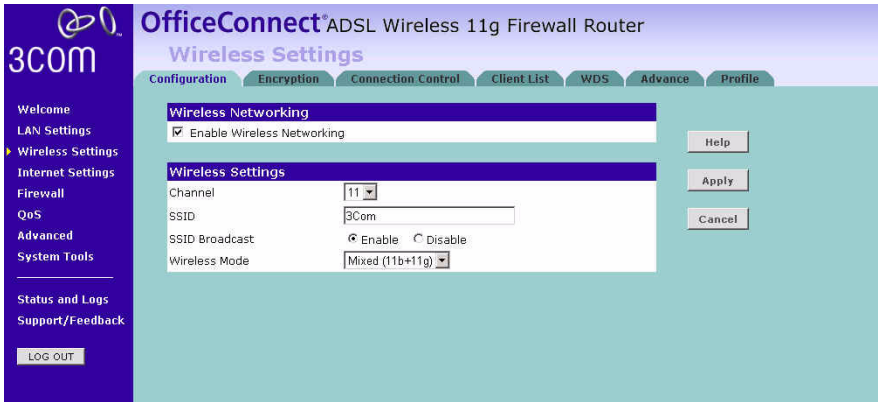
The DHCP server will give out addresses to both wired and wireless clients.

Wireless Settings

The Wireless Settings screens allow you to configure the settings for the wireless connections.

You can enable or disable the wireless connection for your LAN. When disabled, no wireless PCs can gain access to either the Internet or other PCs on your wired or wireless LAN through this Router.

Figure 31 Wireless Settings Screen



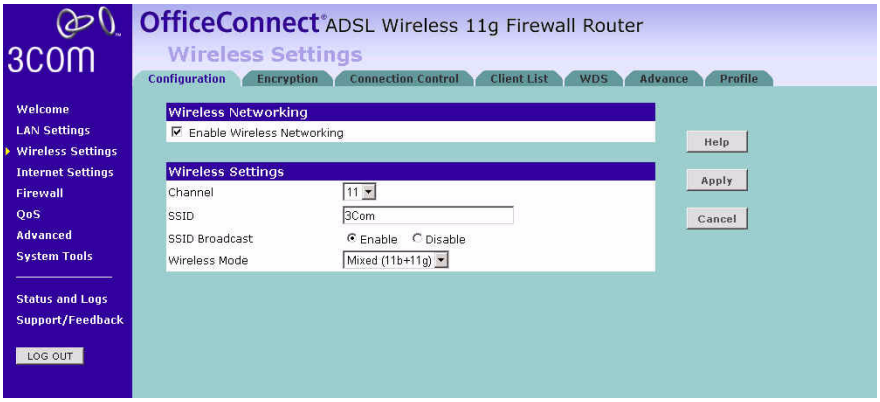
There are seven tabs available:

- Configuration
- Encryption
- Connection Control
- Client List
- WDS
- Advance
- Profile

Configuration

The Wireless Configuration Screen allows you to turn on/ turn off the wireless function, and set up basic wireless settings.

Figure 32 Wireless Configuration Screen



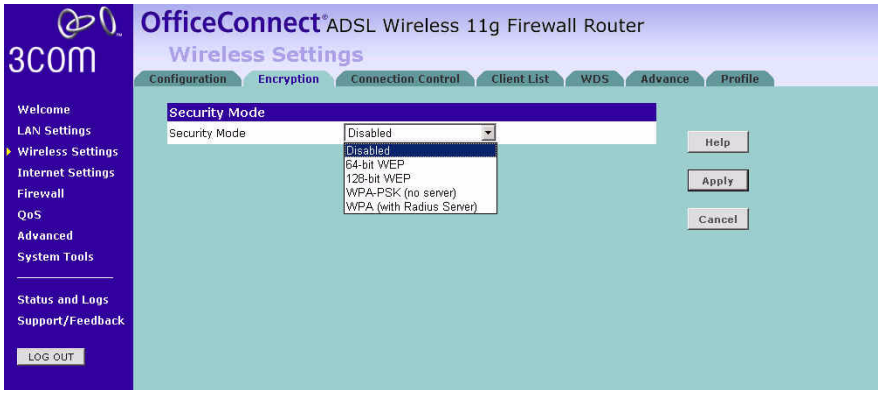
To enable the wireless function:

1. Check *Enable Wireless Networking* checkbox.
2. Select the wireless channel you want to use from the *Channel* drop-down menu.
3. Specify the SSID to be used by your wireless network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network a unique name.
4. Enable or disable *SSID Broadcast*.

   A feature of many wireless network adapters is that a computer's SSID can be set to ANY, which means it looks randomly for any existing wireless network. The available networks are then displayed in a site survey, and your computer can select a network. By clicking *Disable*, you can block this random search, and set the computer's SSID to a specific network (for example, WLAN). This increases network security. If you decide to enable *SSID Broadcast*, ensure that you know the name of your network first.
5. Select whether your Router will operate in 11b mode only, 11g mode only, or mixed 11b and 11g from the *Wireless Mode* drop-down menu.
6. Click *Apply*.

Encryption This feature prevents any non-authorized party from reading or changing your data over the wireless network.

Figure 33 Encryption Screen



Select the wireless security mode that you want to use from the drop-down menu, and click *Apply*. There are five selections:

- Disabled (see page 45)
- 64-bit WEP (see page 46)
- 128-bit WEP (see page 47)
- WPA-PSK (no server) (see page 48)
- WPA (with RADIUS Server) (see page 49)

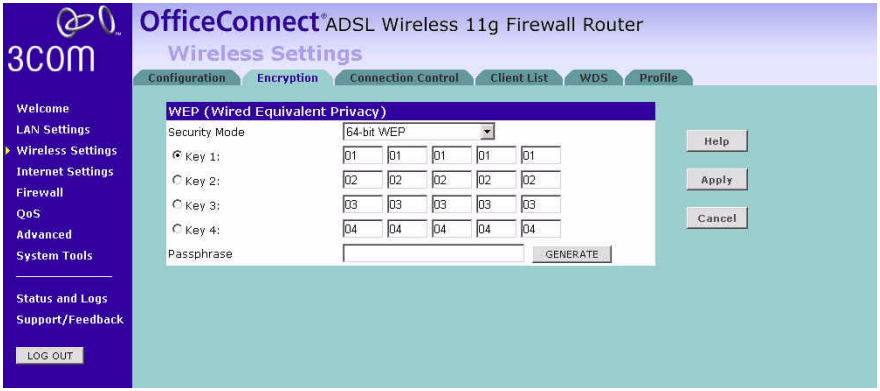
Disabled

In this mode, wireless transmissions will not be encrypted, and will be visible to everyone. However, when setting up or debugging wireless networks, it is often useful to use this security mode.

64-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be setup on your Router and wireless client devices to use WEP.

Figure 34 64-bit WEP Screen



To enable 64-bit WEP:

1 You can enter the 64-bit WEP key manually:

- enter the WEP key as 5 pairs of hex digits (0-9, A-F).

Or you can generate the 64-bit WEP key automatically:

- enter a memorable passphrase in the *Passphrase* box, and then click *Generate* to generate the hex keys from the passphrase.

For 64-bit WEP, you can enter up to four keys, in the fields *Key 1* to *Key 4*. The radio button on the left hand side selects the key that is used in transmitting data.

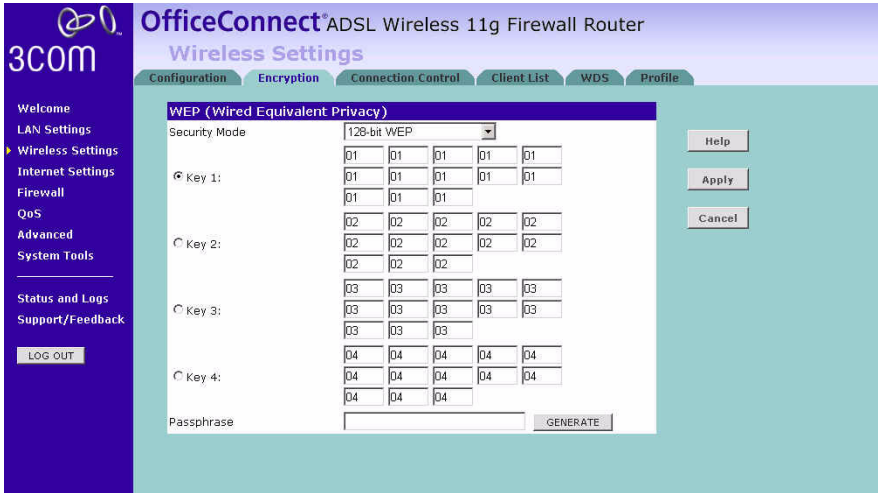
Note that all four WEP keys on each device in the wireless network must be identical.

2 Click *Apply*.

128-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be set up on your Router and wireless client devices to use WEP.

Figure 35 128-bit WEP Screen



To enable 128-bit WEP:

1 You can enter the 128-bit WEP key manually:

- enter your WEP key as 13 pairs of hex digits (0-9, A-F).

Or you can generate the 128-bit WEP key automatically:

- enter a memorable passphrase in the *Passphrase* box, and then click *Generate* to generate the hex keys from the passphrase.

The WEP keys on each device on the wireless network must be identical.

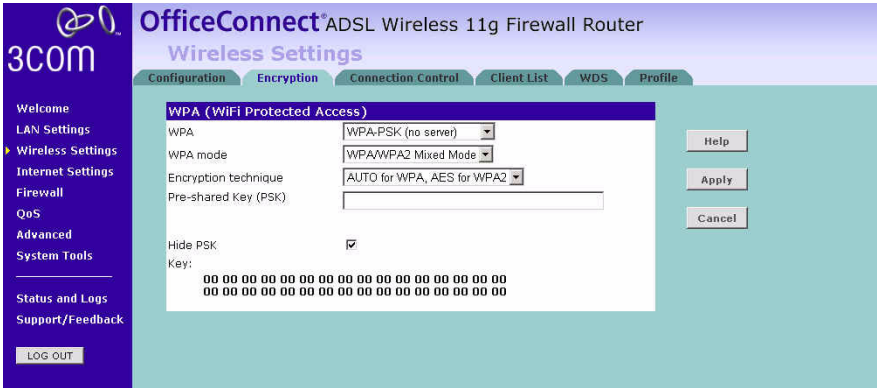
In 128-bit WEP mode, only one WEP key can be specified.

2 Click *Apply*.

WPA-PSK (no server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. If your network does not have a RADIUS server. Select the no server option.

Figure 36 WPA-PSK (no server) Screen

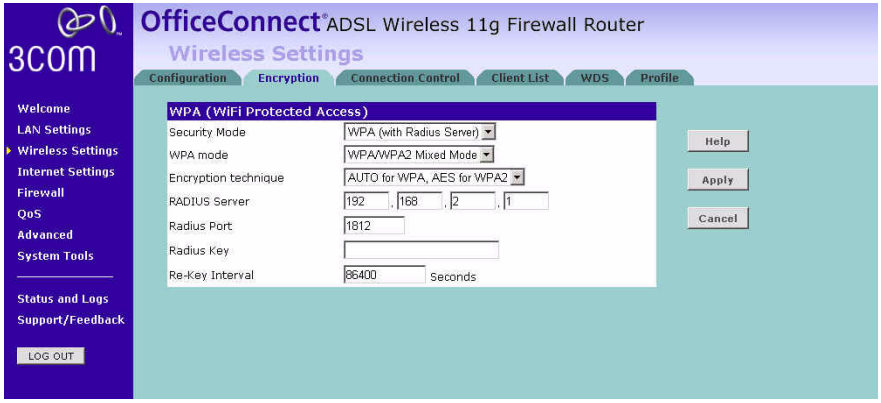


1. Select WPA-PSK (no server) from the *WPA* drop-down menu.
2. Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.
3. Select Encryption technique from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
4. Enter the pre-shared key in the *Pre-shared Key (PSK)* field. The pre-shared key is a password, in the form of a word, phrase or series of letters and numbers. The key must be between 8 and 63 characters long and can include spaces and symbols. Each client that connects to the network must use the same key.
5. If you want the key that you enter to be shown on the screen as a series of asterisks (*), then check the *Hide PSK* checkbox.
6. Click *Apply*.

WPA (with RADIUS Server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. This function requires that a RADIUS server is running on the network.

Figure 37 WPA (with RADIUS Server) Screen



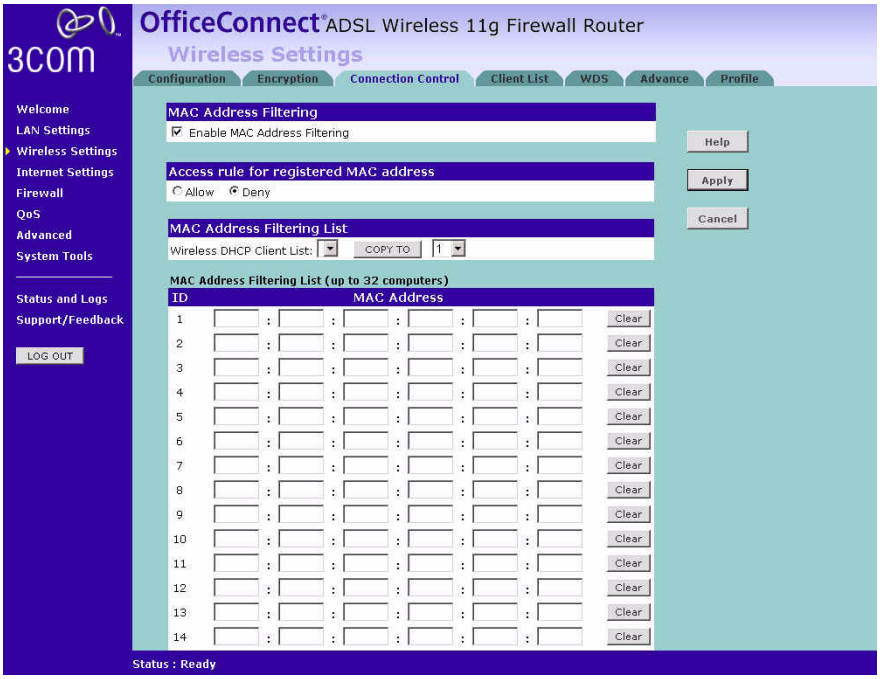
1. Select WPA with RADIUS server from the *Security Mode* drop-down menu.
2. Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.
3. Select Encryption technique from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
4. Enter the IP address of the RADIUS server on your network into the *RADIUS Server* field.
5. Enter the port number that the RADIUS server is operating on in the *RADIUS Port* field.
6. Enter the key for the RADIUS server in the *RADIUS Key* field.
7. By default, the WPA keys are changed every hour, but if you want to change this setting, you can do so by specifying the required time in the *Re-key Interval* field.
8. Click *Apply*.

Connection Control

This feature is used to filter the clients based on their MAC addresses.

Check the *Enable MAC Address Filtering* checkbox, the Connection Control screen will appear.

Figure 38 Connection Control Screen



There are two options available in the *Access rule for registered MAC address* field:

- if you click *Allow*, this means only the MAC addresses registered here in the list will be allowed to access the Router via wireless link.
- if you click Deny, this means the registered MAC addresses will not be able to access the Router via wireless link.

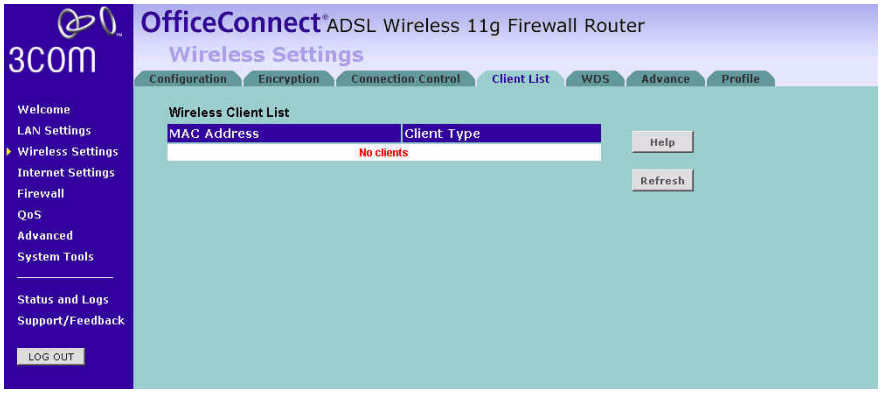
Use the *MAC Address Filtering List* to quickly copy the MAC addresses of the current wireless clients into the list table. You can define up to 32 MAC addresses to the list.

You can click *Clear* to delete the current entry in the list.

Client List

You can view the list of all wireless clients that are connected to the Router.

Figure 39 Client List Screen

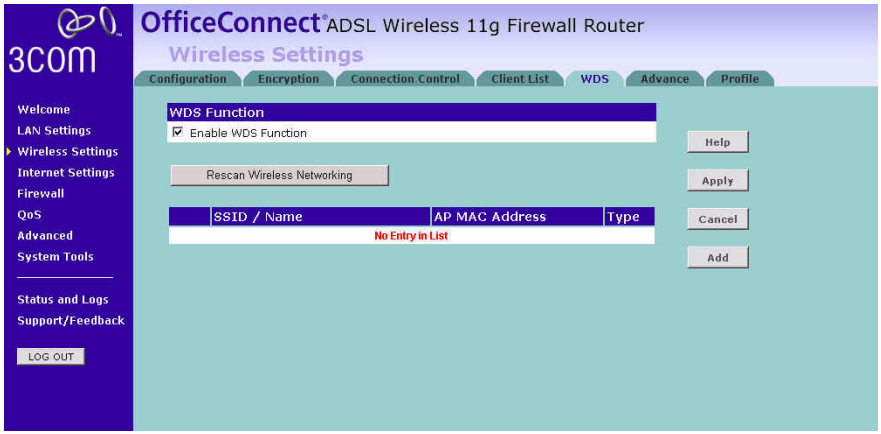


Click *Refresh* to update the list.

WDS Settings

The Router supports WDS (Wireless Distribution System). WDS enables one or more Access Points to rebroadcast received signals to extend range and reach, though this can affect the overall throughput of data.

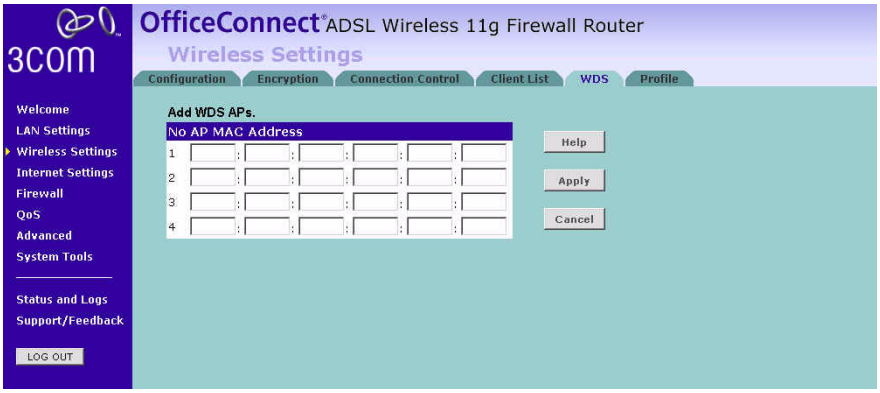
Figure 40 Wireless WDS Settings Screen



1. Check the *Enable WDS Function* checkbox.
2. To refresh the list of available access points, click *Rescan Wireless Networking*.

3 Click *Add* to add the MAC address of the AP to the list, the add WDS screen will appear (refer to Figure 41).

Figure 41 Add WDS screen

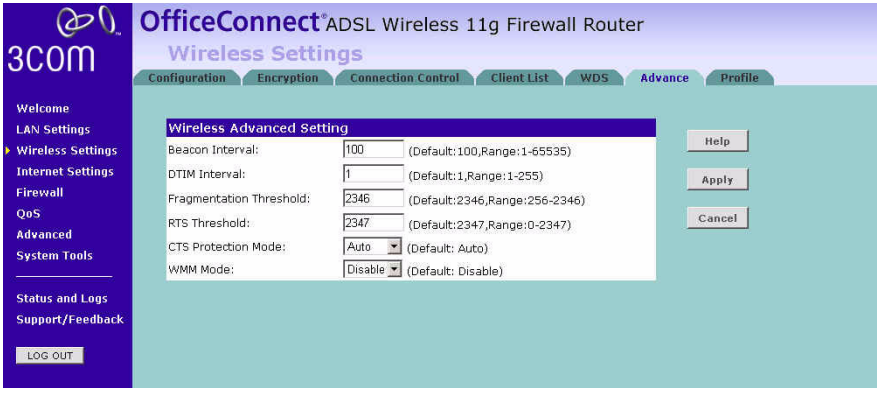


Enter the MAC address(es) of one or more access points in the *AP MAC Address* table, and click *Apply*.

Advance

The Advance screen allows you to configure detailed settings for your wireless connection.

Figure 42 Wireless Advanced Setting screen



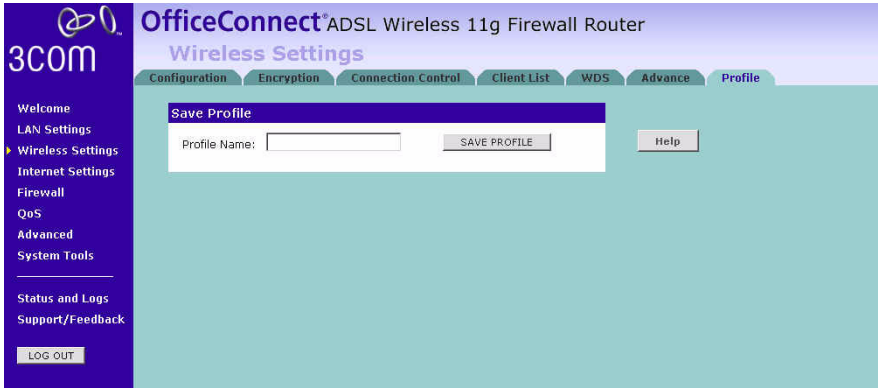
There are six parameters that you can configure:

- Beacon Interval: this represents the amount of time between beacon transmissions.

- DTIM Interval: A DTIM (Delivery Traffic Indication Message) is a countdown mechanism used to inform your wireless clients of the next window for listening to broadcast and multicast messages.
- Fragmentation Threshold: this is the maximum size for directed data packets transmitted. The use of fragmentation can increase the reliability of frame transmissions. Because of sending smaller frames, collisions are much less likely to occur.
- RTS Threshold: RTS stands for Request to Send, this parameter controls what size data packet the low level RF protocol issues to an RTS packet.
- CTS Protection Mode: CTS stands for Clear to Send. CTS Protection Mode boosts the Router's ability to intercept 802.11b/ 802.11g transmissions. Conversely, CTS Protection Mode decreases performance. Leave this feature disabled unless you encounter severe communication difficulties between the Router and your wireless clients.
- WMM Mode: Wireless Multimedia (WMM) mode, which supports devices that meet the 802.11E QBSS standard.

Profile This feature is used to quickly set up the configuration parameters and save them into one profile for easy connection.

Figure 43 Profile Screen



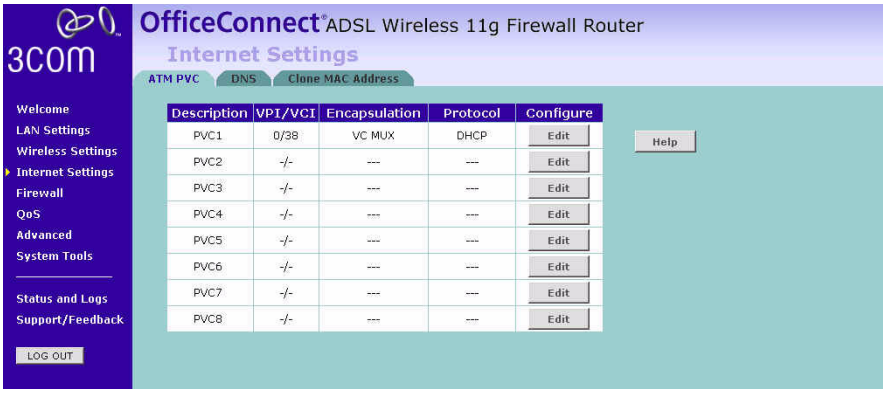
Internet Settings

You can configure the settings for your DSL connection.

ATM PVC

This feature is used to configure the parameters for your DSL connection. The information necessary to complete these screens should be obtained from your ISP. Check with your ISP first to find out what type of connection you should choose.

Figure 44 ATM PVC Screen



Description	VPI/VCI	Encapsulation	Protocol	Configure
PVC1	0/38	VC MUX	DHCP	Edit
PVC2	-/-	---	---	Edit
PVC3	-/-	---	---	Edit
PVC4	-/-	---	---	Edit
PVC5	-/-	---	---	Edit
PVC6	-/-	---	---	Edit
PVC7	-/-	---	---	Edit
PVC8	-/-	---	---	Edit

You should see the first entry already contains information that's been configured using the Wizard in the initial setup. If you want to change that information or set up other connection, click *Edit.*

There are six options available for the DSL connection mode:

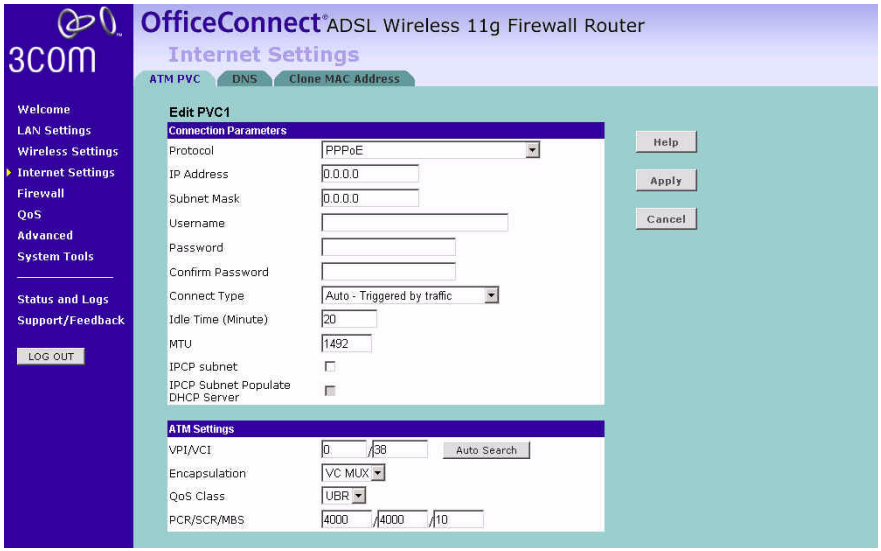
- *PPPoE* — PPP over Ethernet, providing routing for multiple PCs (see page 55)
- *PPPoA* — PPP over ATM, providing routing for multiple PCs (see page 57)
- *Bridge Mode* — RFC1483 Bridged Mode, for single PCs only (see page 59)
- *Routing Mode over ATM* — RFC1483 Routed Mode, for multiple PCs (see page 61)
- *Dynamic/Fixed IP in 1483 Bridge Mode (for multiple PCs)* (see page 63)
- *Disable* — To disable the Internet connection function (see page 64)

Click *Edit* to set the detailed settings.

PPPoE

PPP over Ethernet, provides routing for multiple PCs. To configure this function correctly, you should obtain the information from your ISP.

Figure 45 PPPoE Settings Screen



1 Select *PPPoE* from the *Protocol* drop-down menu.

2 Enter the IP address and Subnet Mask information provided by your ISP into the *IP address* and *Subnet Mask* fields.

3 Enter the user name assigned to you by your ISP in the *Username* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Confirm Password* field.

4 Select the connection type from the *Connect Type* drop-down menu.

- *Always Connected* means that Internet connection to your ISP is always on.
- *Auto - Triggered by Traffic* means your Router will automatically connect to your ISP every time a PC needs to access the Internet.
- *Manual - Start in Disconnected* means that after re-booting the Router, the Internet connection will need to be re-established manually by the user.
- *Manual - Start in Connected* means that after re-booting the Router, it will automatically establish a connection to your ISP.

- *Manual - Start in Last State* means that after re-booting the Router, the Internet connection will stay in the previous condition before the reboot.

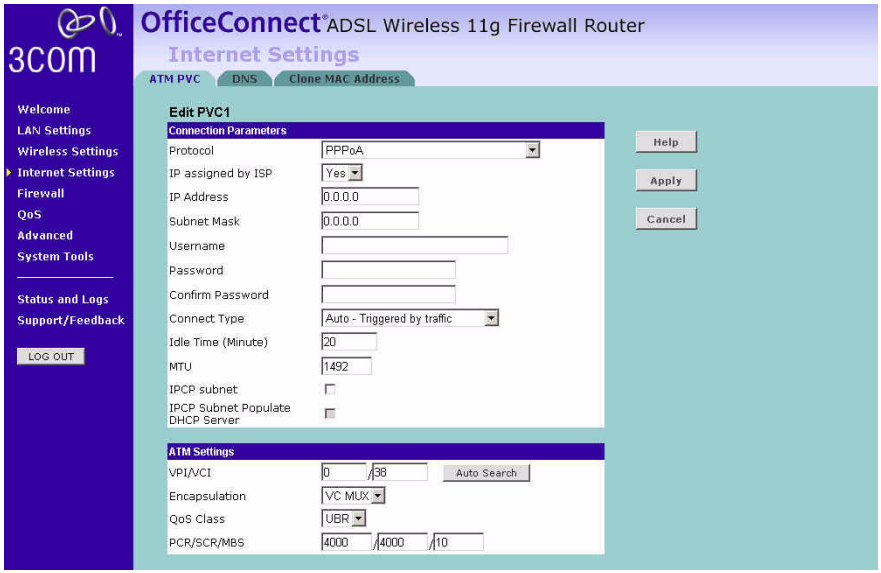
5. If you want your Router to automatically disconnect from the Internet after a period of inactivity, specify a time in the *Idle Time (Minutes)* field. (Enter a value of 0 to disable this timeout).
6. Enter the *Maximum Transmission Unit (MTU)* value supplied by your ISP. If you do not know this, leave it at the default value.
7. The Router supports the IP Control Protocol (IPCP) Subnet Mask Support feature, check the *IPCP subnet* checkbox to enable it.
8. To use the IPCP Subnet Mask Support for the DHCP clients, check the *IPCP Subnet Populate DHCP Server* checkbox.
9. Enter the VPI and VCI values provided by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.
10. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* field. This information should be provided to you by your ISP.
11. Select the type of Quality of Service (CBR, UBR or VBR) in the QoS field.
    - CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
    - VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
    - UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".
12. Enter the PCR/SCR/MBS values. This information should be provided to you by your ISP.

13 Click *Apply*.

PPPoA

PPP over ATM, this is a popular choice among European DSL providers. To configure this function correctly, you should obtain the information from your ISP.

Figure 46 PPPoA Settings Screen



1 Select *PPPoA* from the *Protocol* drop-down menu.

2 IP assigned by ISP:

- Select *Yes,* if your ISP assigns your IP address dynamically, and proceed to next step.
- If your ISP has assigned you a fixed or static IP address, select *No* in the *IP assigned by ISP* field.
  Then enter the IP address and Subnet Mask information provided by your ISP into the *IP address* and *Subnet Mask* fields.

3 Enter the user name assigned to you by your ISP in the *Username* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Confirm Password* field.

4. Select the connection type from the *Connect Type* drop-down menu.
   - *Always Connected* means the Internet connection to your ISP is always on.
   - *Auto - Triggered by Traffic* means your Router will automatically connect to your ISP every time a PC needs to access the Internet.
   - *Manual - Start in Disconnected* means that after re-booting the Router, the Internet connection will need to be re-established manually by the user.
   - *Manual - Start in Connected* means that after re-booting the Router, it will automatically establish connection to your ISP.
   - *Manual - Start in Last State* means that after re-booting the Router, the Internet connection will stay in the previous condition before the reboot.
5. If you want your Router to automatically disconnect from the Internet after a period of inactivity, specify a time in the *Idle Time (Minutes)* field. (Enter a value of 0 to disable this timeout).
6. Enter the *MTU* value supplied by your ISP. If you do not know this, leave it at the default value.
7. The Router supports the IP Control Protocol (IPCP) Subnet Mask Support feature, check the *IPCP subnet* checkbox to enable it.
8. To use the IPCP Subnet Mask Support for the DHCP clients, check the *IPCP Subnet Populate DHCP Server* checkbox.
9. Enter the VPI and VCI parameters provided to you by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.
10. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation Type* field. This information is provided to you by your ISP.
11. Select the type of Quality of Service (CBR, UBR or VBR) in the QoS field.
    - CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
    - VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is

used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.

- UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".

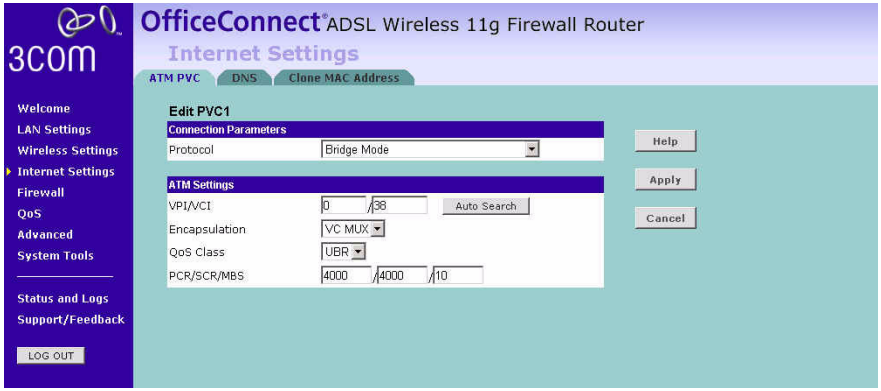
12 Enter the PCR/SCR/MBS values.

13 Click *Apply*.

Bridge Mode

If your ISP limits access to the Internet to specific computers, this means that traffic to/from these computers only will be forwarded. In this case, Bridge Mode is used to connect to the ISP. The ISP will generally give one Internet account and limit only one computer to access the Internet. Check with your ISP to determine if this mode is used for your DSL connection. To configure the settings correctly, you should obtain the information from your ISP.

Figure 47 Bridge Mode Screen



1 Select *Bridge Mode* from the *Protocol* drop-down menu.

2 Enter the VPI and VCI parameters in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.

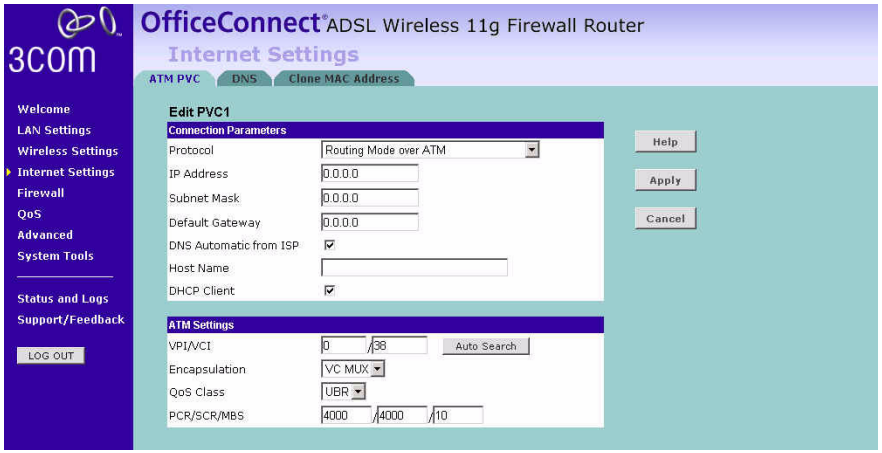
3 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation Type* field. This information should be provided to you by your ISP.

4. Select the type of Quality of Service that you want from the *QoS Class* drop-down menu.
   - CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
   - VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
   - UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".
5. Enter the PCR/SCR/MBS values.
6. Click *Apply*.

Routing Mode over ATM (RFC 1483 Routed Mode)

This mode is commonly used with either dynamic or static IP addressing. In this mode the WAN ADSL port will be configured with an IP address provided by the ISP. To configure the settings correctly, you should obtain the information on this screen from your ISP.

Figure 48 Routing Mode over ATM Screen



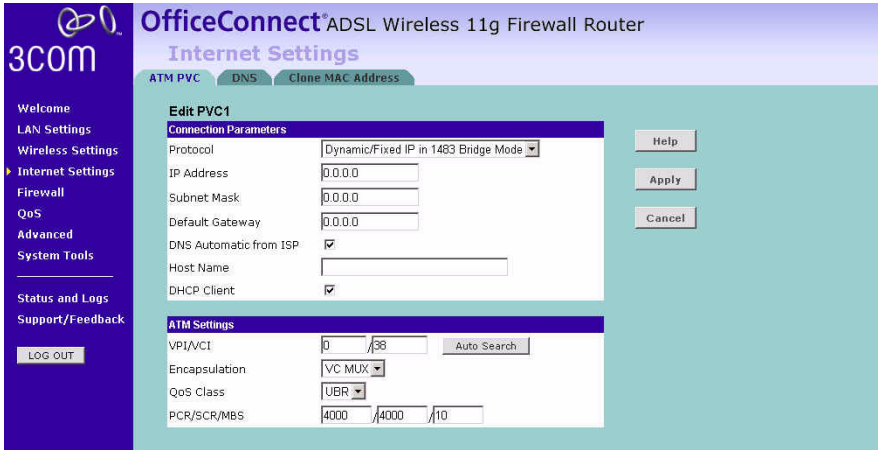
1. Select *Routing Mode over ATM* from the *Protocol* drop-down menu.
2. Enter the IP address, Subnet Mask and Default Gateway information provided by your ISP into the *IP address*, *Subnet Mask* and *Default Gateway* fields.
3. Check the *DNS Automatic from ISP* checkbox, if your ISP automatically configure DNS. However, if you need to configure DNS manually, enter the IP address in the *DNS Address* field. (If your ISP uses a secondary DNS, enter the IP address in the *Secondary DNS Address* field).
4. Enter the host name in the *Host Name* filed.
5. If your ISP uses DHCP to automatically assign IP addresses, check the *DHCP Client* checkbox.
6. Enter the VPI and VCI parameters provided to you by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.
7. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* field. This information should be provided to you by your ISP.

8. Select the type of Quality of Service that you want from the *QoS Class* drop-down menu.
   - CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
   - VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
   - UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".
9. Enter the PCR/SCR/MBS values.
10. Click *Apply*.

Dynamic/Fixed IP in 1483 Bridge Mode (For Multiple PCs)

In this example, the ISP uses fixed/dynamic IP to provide the Internet connection. To configure this function correctly, you should obtain the information on this screen from your ISP.

Figure 49 Dynamic/Fixed IP for Bridge Mode Screen



1. Select *Dynamic/Fixed IP in 1483 Bridge Mode* from the *Protocol* drop-down menu.
2. Enter the IP address, Subnet Mask and Default Gateway information provided by your ISP into the *IP address*, *Subnet Mask* and *Default Gateway* fields.
3. Check the *DNS Automatic from ISP* checkbox, if your ISP automatically configures DNS. However, if you need to configure DNS manually, enter the IP address in the *DNS Address* field. (If your ISP uses a secondary DNS, enter the IP address in the *Secondary DNS Address* field).
4. Enter the host name in the *Host Name* field.
5. If your ISP uses DHCP to automatically assign IP addresses, check the *DHCP Client* checkbox.
6. Enter the VPI and VCI parameters provided by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.
7. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* field. This information will have been provided to you by your ISP.

8 Select the type of Quality of Service that you want from the QoS Class drop-down menu.

- CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
- VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
- UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".

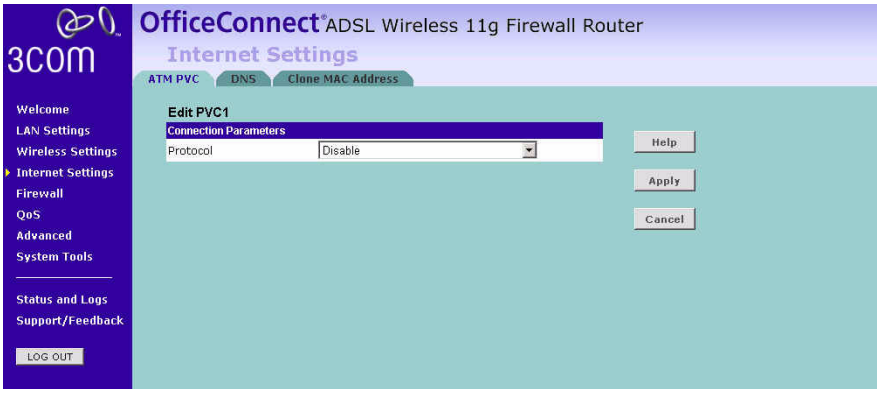
9 Enter the PCR/SCR/MBS values.

10 Click *Apply*.

Disable

Selecting this option means that you do not want your Router to connect to the Internet.

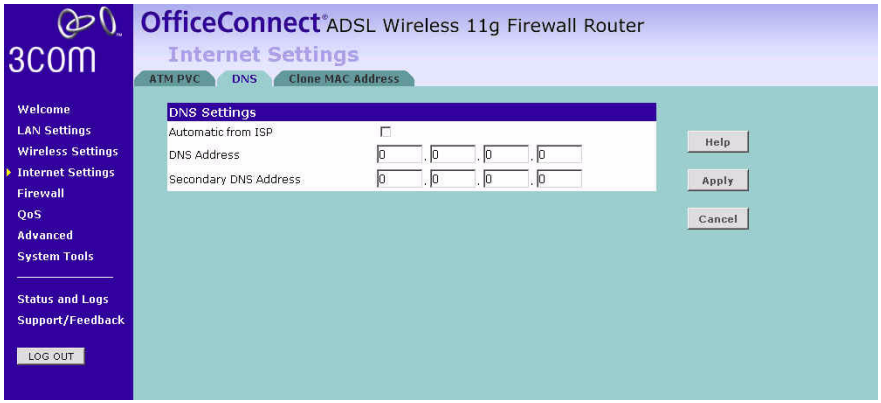
Figure 50 Disable Internet Connection Screen



DNS Domain Name Service (or Server) is an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, a DNS service must translate the name into the corresponding IP address. For example, the domain name www.example.com might translate to 198.105.232.4.

Check with your ISP for information on this screen.

Figure 51 DNS Screen



If the DNS information is automatically provided by your ISP every time you connect to it, check the *Automatic from ISP* checkbox.

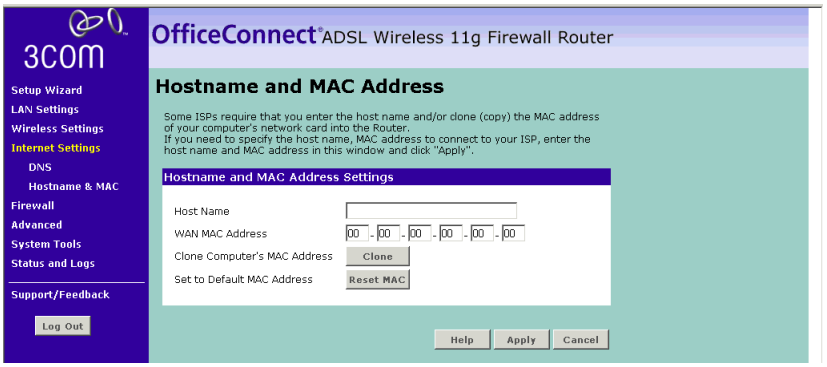
If your ISP provided you with specific DNS addresses to use, enter them into the appropriate fields on this screen and click *Apply*.

Many ISPs do not require you to enter this information into the Router. If you are using a Static IP connection type, you may need to enter a specific DNS address and secondary DNS address for your connection to work properly. If your connection type is Dynamic, PPPoA or PPPoE, it is likely that you do not have to enter a DNS address.

Hostname & Clone MAC address

To configure the Hostname and Clone MAC Address information for your Router, select *Internet Settings*, then go to the *Clone MAC address* tab. The Hostname and MAC Address screen displays.

Figure 52 Hostname and MAC Address Screen



1. Some ISPs require a host name. If your ISP has this requirement, enter the host name in the *Host Name* field.
2. Three different ways to configure the WAN MAC Address:
   - If your ISP requires an assigned MAC address, enter the values in the *WAN MAC address* field.

     or
   - If the computer you are now using is the one that was previously connected directly to the cable modem, click *Clone*.

     or
   - To reset the MAC Address to the default, click *Reset MAC*.
3. Click *Apply* to save the settings.

Firewall

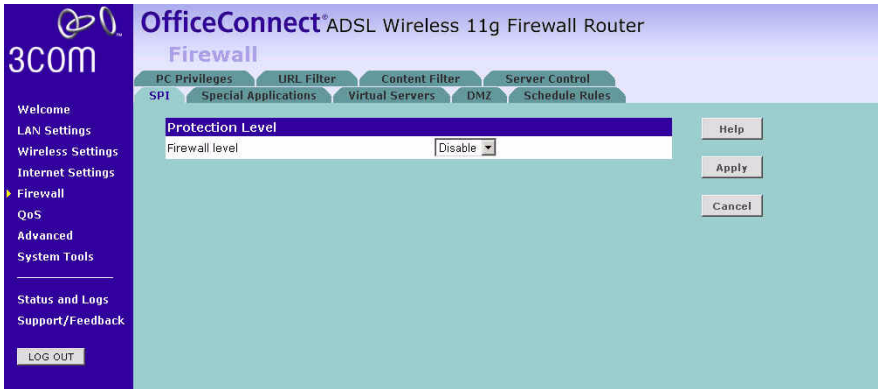
From these screens, you can configure settings for the firewall.

Your Router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including Ping of Death (PoD) and Denial of Service (DoS) attacks. You can turn the firewall function off if needed. Turning off the firewall protection will not leave your network completely vulnerable to hacker attacks, but 3Com recommends that you leave the firewall enabled whenever possible.

SPI Stateful Packet Inspection (SPI) - The Intrusion Detection Feature of the Router limits access for incoming traffic at the WAN port.

This feature is called a "stateful" packet inspection, because it examines the contents of the packet to determine the state of the communications; i.e., it ensures that the stated destination computer has previously requested the current communication. This is a way of ensuring that all communications are initiated by the recipient computer and are taking place only with sources that are known and trusted from previous interactions. In addition to being more rigorous in their inspection of packets, stateful inspection firewalls also close off ports until connection to the specific port is requested.

Figure 53 Firewall Screen



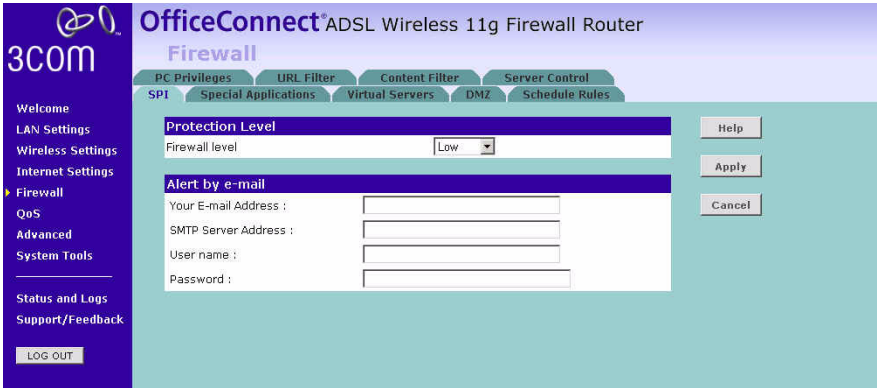
To enable the firewall function:

1. Select the level of protection (High, Medium, or Low) that you desire from the *Firewall level* drop-down menu.
2. Click *Apply*.

For low and medium levels of firewall protection, refer to Figure 54.

For high level of firewall protection, refer to Figure 55.

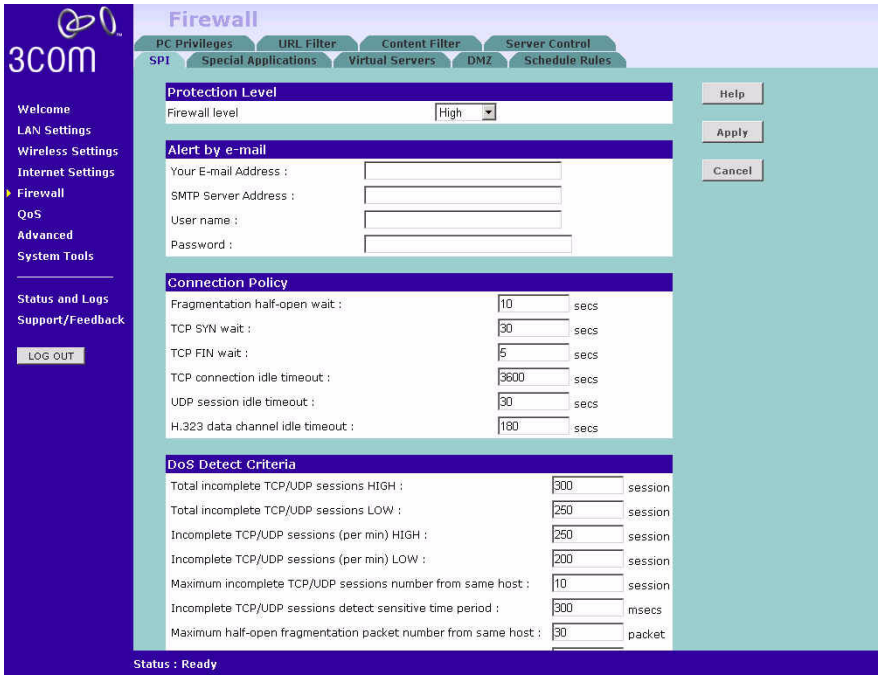
Figure 54 Low and Medium Level Firewall Protection Screen



When abnormal network activity occurs, an alerting email will be sent out to you. Enter the following information to receive the email:

- Your E-mail Address
- SMTP Server Address
- User name
- Password

Figure 55 High Level Firewall Protection Screen



If you select high level of protection, you will need to configure additional parameters for the firewall.

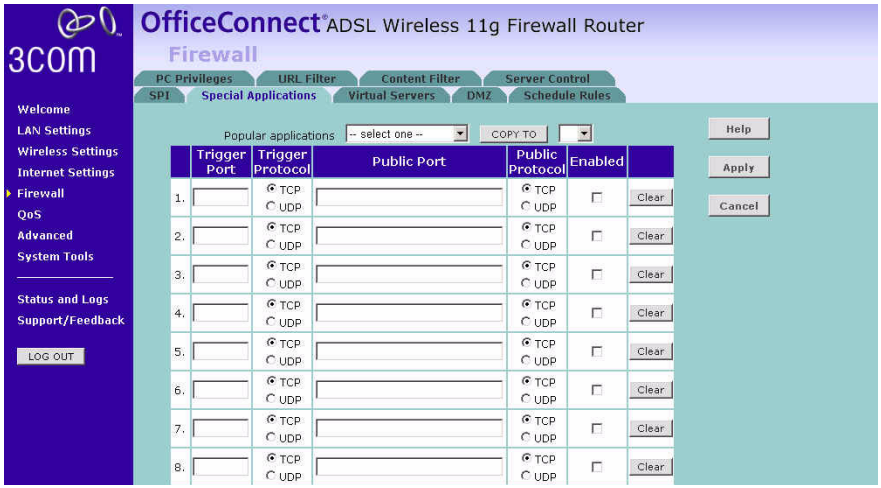
- Fragmentation half-open wait - Configures the number of seconds that a packet state structure remains active. When the timeout value expires, the Router drops the un-assembled packet, freeing that structure for use by another packet.
- TCP SYN wait - Defines how long the software will wait for a TCP session to synchronize before dropping the session.
- TCP FIN wait - Specifies how long a TCP session will be maintained after the firewall detects a FIN packet.
- TCP connection idle timeout - The length of time for which a TCP session will be managed if there is no activity.
- UDP session idle timeout - The length of time for which a UDP session will be managed if there is no activity.
- H.323 data channel idle timeout - The length of time for which an H.323 session will be managed if there is no activity.

- Total incomplete TCP/UDP sessions HIGH - Defines the rate of new unestablished sessions that will cause the software to start deleting half-open sessions.
- Total incomplete TCP/UDP sessions LOW - Defines the rate of new unestablished sessions that will cause the software to stop deleting half-open sessions.
- Incomplete TCP/UDP sessions (per min) HIGH - Maximum number of allowed incomplete TCP/UDP sessions per minute.
- Incomplete TCP/UDP sessions (per min) LOW - Minimum number of allowed incomplete TCP/UDP sessions per minute.
- Maximum incomplete TCP/UDP sessions number from same host - Maximum number of incomplete TCP/UDP sessions from the same host.
- Incomplete TCP/UDP sessions detect sensitive time period - Length of time before an incomplete TCP/UDP session is detected as incomplete.
- Maximum half-open fragmentation packet number from same host - Maximum number of half-open fragmentation packets from the same host.
- Half-open fragmentation detect sensitive time period - Length of time before a half-open fragmentation session is detected as half-open.
- Flooding cracker block time - Length of time from detecting a flood attack to blocking the attack.

Special Applications

Special Applications let you choose specific ports to be open for specific applications to work properly with the Network Address Translation (NAT) feature of the Router.

Figure 56 Special Applications Screen



A list of popular applications has been included to choose from. Select your application from the *Popular Applications* drop-down menu. Then select the row that you want to copy the settings to from the *Copy To* drop-down menu, and click *Copy To*. The settings will be transferred to the row that you specified. Click *Apply* to save the setting for that application.

If your application is not listed, you will need to check with the application vendor to determine which ports need to be configured. You can manually enter the port information into the Router.

To manually enter the port information:

1. Specify the trigger port (the one used by the application when it is initialized) in the *Trigger Port* column, and specify whether the trigger is TCP or UDP.
2. Specify the Public Ports used by the application, that will need to be opened up in the firewall for the application to work properly. Also specify whether these ports are TCP or UDP.
3. Check the *Enabled* checkbox, then click *Apply.*

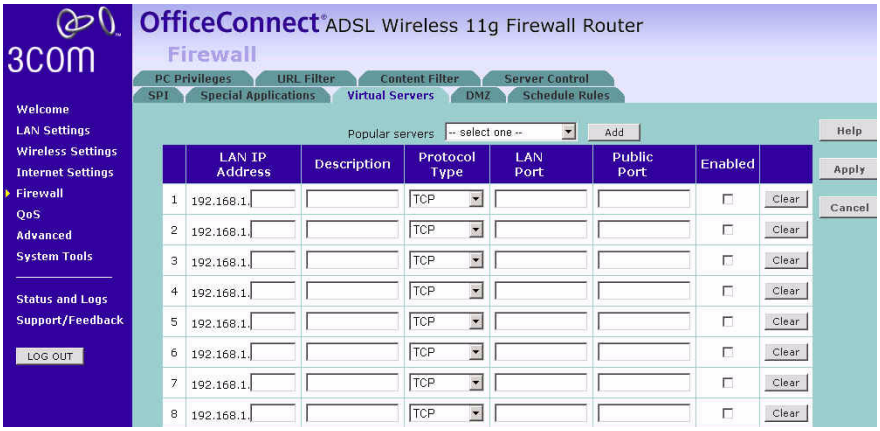
Virtual Servers

The Virtual servers feature allows you to route external (Internet) calls for services such as a web server (port 80), FTP server (Port 21), or other applications through your Router to your internal network. Since your internal computers are protected by a firewall, machines from the Internet cannot get to them because they cannot be 'seen'.

If you need to configure the Virtual Server function for a specific application, you will need to contact the application vendor to find out which port settings you need.

The maximum number of virtual servers that can be configured is 20.

Figure 57 Virtual Servers Screen



A list of popular servers has been included to choose from. Select the server from the *Popular servers* drop-down menu. Then click *Add*, your selection will be added to the table.

If the server that you want to use is not listed in the drop-down menu, you can manually add the virtual server to the table.

To manually configure your virtual servers:

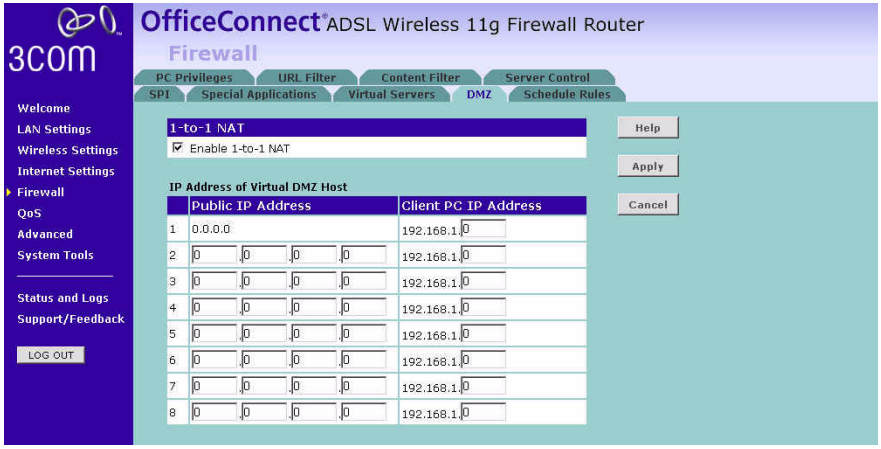
1. Enter the IP address, and the description in the spaces provided for the internal machine.
2. Select the protocol type (TCP, UDP, or both TCP and UDP) from the drop-down menu.
3. Specify the public port that will be seen by clients on the Internet, and the LAN port which the traffic will be routed to.

4 You can enable or disable each Virtual Server entry by checking or unchecking the appropriate *Enabled* checkbox.

5 Click *Apply* to save the changes for each Virtual Server entry.

DMZ If you have a client PC that cannot run an Internet application properly from behind the firewall, you can open the client up to unrestricted two-way Internet access. This may be necessary if the NAT feature is causing problems with an application such as a game or video conferencing application.

Figure 58 DMZ Screen



Use this feature on a temporary basis. The computer in the DMZ is not protected from hacker attacks.

To put a computer in the DMZ:

1 Check the *Enable 1-to-1 NAT* checkbox.

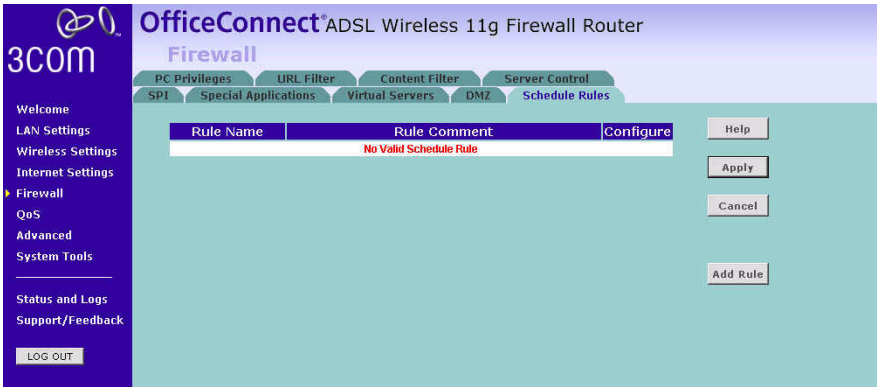
2 Enter the last digits of the LAN IP address in the *Client PC IP Address* field. Enter the IP address (if known) that will be accessing the DMZ PC into the *Public IP Address* field, so that only the computer on the Internet at this address can access the DMZ PC without firewall protection. If the IP address is not known, or if more than one PC on the Internet will need to access the DMZ PC, then set the *Public IP Address* to *0.0.0.0*.

3 Click *Apply*.

Schedule Rule

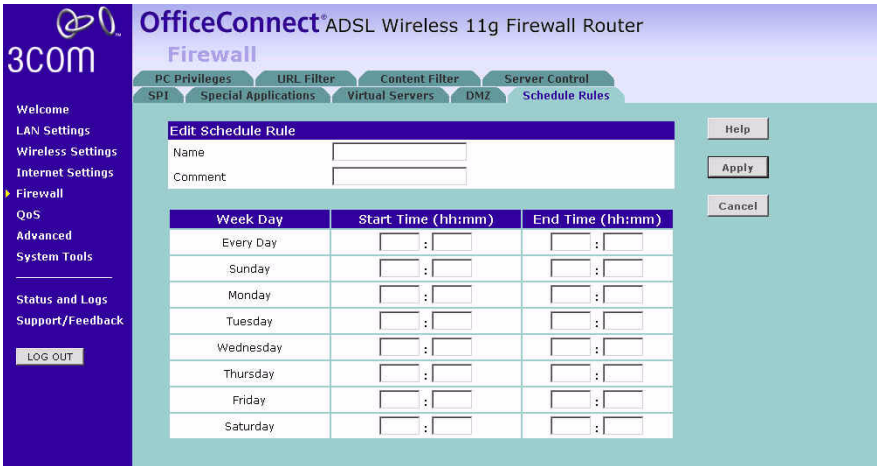
The Router can be configured to restrict access to the Internet, email or other network services at specific days and times. Define the time in this screen, and define the rules in the *PC Privileges* screen (see page 75).

Figure 59 Schedule Rule Screen



1 Click *Add Rule* to add a schedule rule (a screen similar to Figure 60 will appear).

Figure 60 Add Schedule Rule Screen



2 Enter a name and comment for the schedule rule in the *Name* and *Comment* fields.

3 Specify the schedule rules for the required days and times - note that all times should be in 24 hour format.

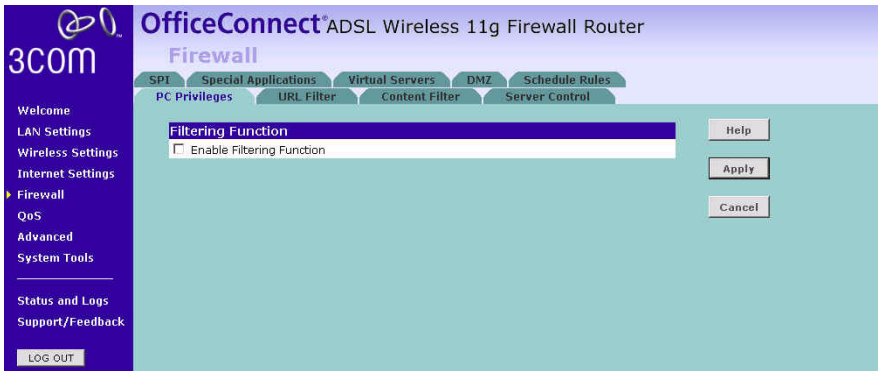
4 Click *Apply*.

PC Privileges

The Router can be configured to restrict access to the Internet, email or other network services at specific days and times. Restriction can be set for a single computer, a range of computers, or multiple computers.

You can define the traffic type permitted or not-permitted to the Internet.

Figure 61 PC Privileges Screen

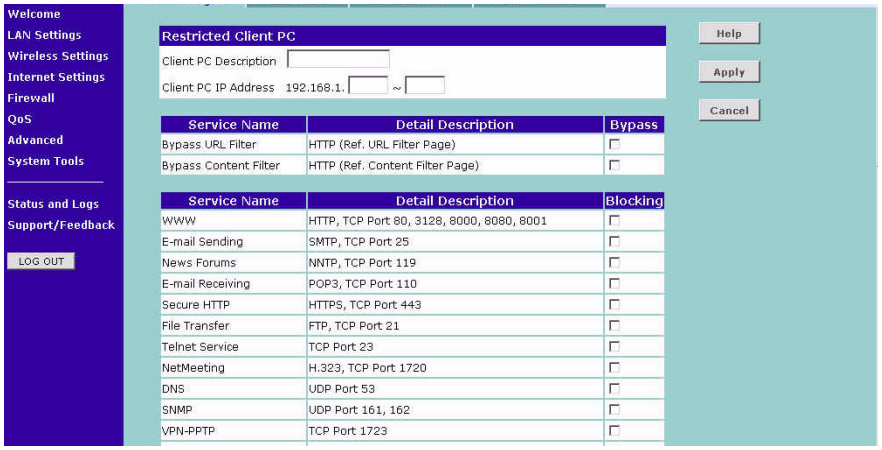


To edit or delete specific existing filtering rules, click on *Edit* or *Delete* for the appropriate filtering rule.

To configure a new filtering rule:

1. Check the *Enable Filtering Function* checkbox.
2. Click *Add PC* (a screen similar to Figure 62 will appear).

Figure 62 PC Privileges Add PC Screen



3. Enter a description in the *Client PC Description* field, and the IP address or IP address range into the *Client PC IP Address* fields.
4. To bypass the URL Filter and Content Filter, check the corresponding *Bypass* checkbox.

   If you check the two options: *Bypass URL Filter*, and *Bypass Content Filter*, then the Web sites and keywords defined in this screen will not be filtered out.

5. Select the services to be blocked. A list of popular services is given on this screen, to block a particular service, check the appropriate *Blocking* checkbox.

   If the service to be restricted is not listed here, you can enter a custom range of ports at the bottom of the screen, under *User Defined Blocked Ports.*

6. If you want the restriction to apply only at certain times, select the schedule rule to apply from the *Schedule Rule* drop-down menu.

   Note that schedule rules are defined on the Schedule Rules screen (see page 74).

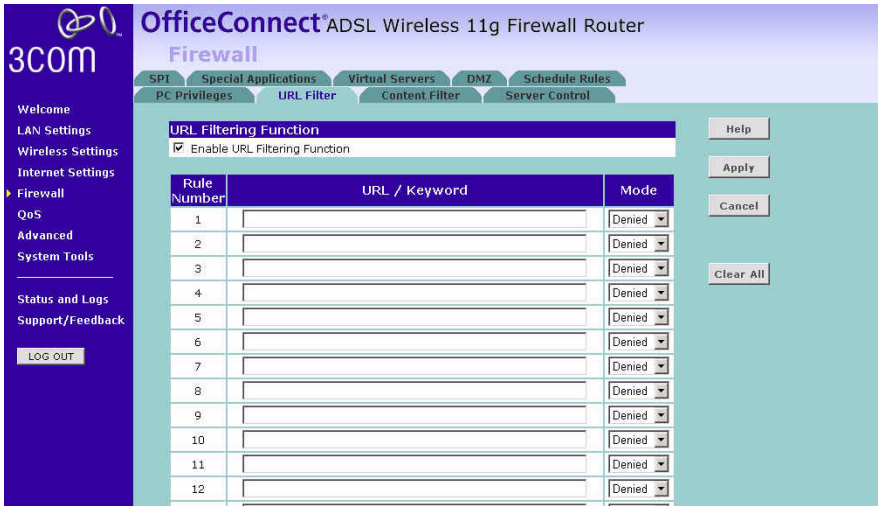
7. Click *Apply* to add the settings.

URL Filter

To configure the URL filter feature, use the table on the URL Filter screen to specify the Web sites (www.somesite.com) and/or keywords you want to filter on your network.

For example, entering a keyword of ***xxx*** would block access to any URL that contains the string ***xxx***.

Figure 63 URL Filter Screen



1 Check the *Enable URL Filtering Function* checkbox.

2 Enter the URL address or keywords in the *URL/Keyword* field.

3 Select *Denied or Allowed* from the *Mode* drop-down menu.

To complete this configuration, you will need to create or modify the filtering rule in the PC Privileges screen (see page 75).

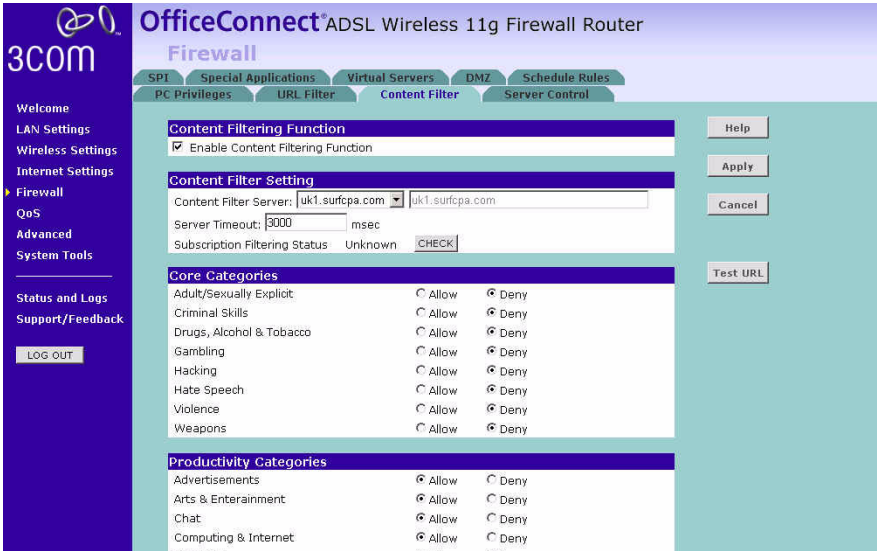
From the *PC Privileges Add PC* screen (Figure 62), if you check the two options: *Bypass URL Filter*, and *Bypass Content Filter*, then the Web sites and keywords defined in this screen will not be filtered out.

Content Filter

You can use the list on the Content Filter screen to specify the type of content that you want to filter out.

The Router comes with a 14-day free trial of the 3Com Content Filter Service (3CSBCFS). To activate the 14-day free trial of the service, you must first register your Router at www.3com.com. To continue using the service after the trial period, you must purchase the 12-month subscription license.

Figure 64 Content Filter Screen



To configure the Content Filter feature:

1. Check the *Enable Content Filtering Function* checkbox.
2. Select the server that you want to use from the *Content Filter Server* drop-down menu. If the server you want to use is not listed, enter the server address manually.
3. Define the time in the *Server Timeout* field (the default value is 3000ms). If the Content Filter Server does not respond within this time period, the Router will use the default content filter rule. The default rule is either *Allow* or *Deny None of the above (Uncategorized URL)*. You can configure this rule at the bottom of the Content Filter screen.

4 If you are not sure about your subscription status, click *CHECK* in *Subscription Filtering Status* to find out if you have a current, valid subscription.

5 Subjects are listed under *Core Categories* and *Productivity Categories*. You can define what content should be viewed/blocked using the *Allow/Deny* option. The *Deny* option is used to filter out the content that contains the specific subject matter. Content with a specific subject matter will not be filtered out if the *Allow* option is checked.

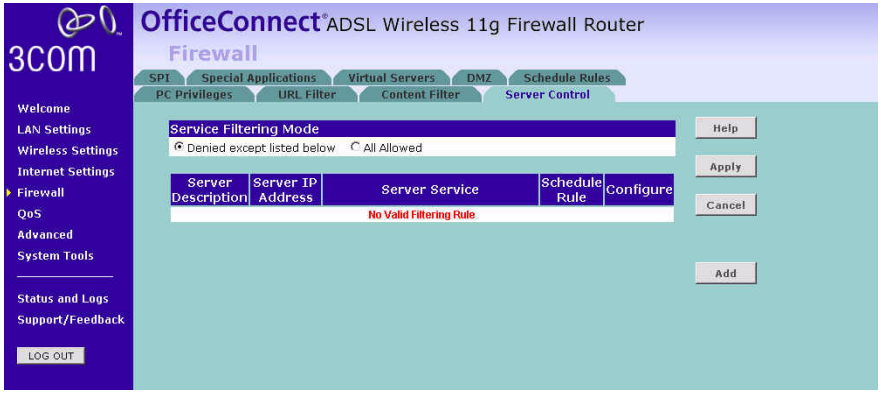
6 Click *Apply* for the changes to take effect.

Server Control

The Router can be configured to restrict access to the Internet, email or other network services at specific days and times. Restriction can be set for the servers.

You can define the traffic type permitted or not-permitted to the Internet.

Figure 65 Server Control Screen

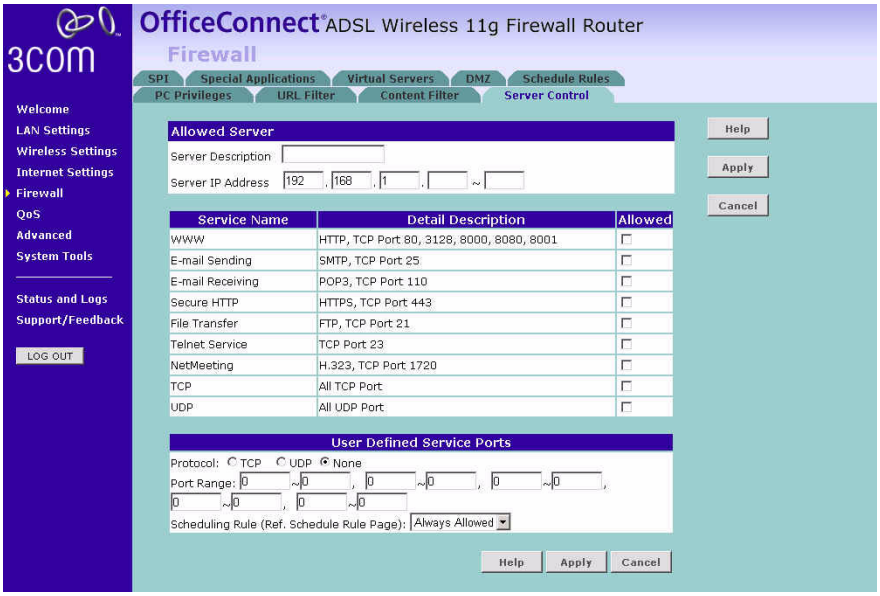


In the *Service Filtering Mode*, select one option:

- Denied except listed below.
- All Allowed.

Click *Add* to add a new entry to the table (see Figure 66).

Figure 66 Server Control Add Server Screen



1 Enter a description in the *Server Description* field, and the IP address or IP address range into the *Server IP Address* fields.

2 Select the services that will be allowed. A list of popular services is given on this screen, to unblock a particular service, check the appropriate *Allowed* checkbox.

   If the service to be allowed is not listed here, you can enter a custom range of ports at the bottom of the screen, under *User Defined Service Ports.*

3 Select the time that the rule will be enforced from the *Scheduling Rule* drop-down menu.

4 Click *Apply* to save the settings.

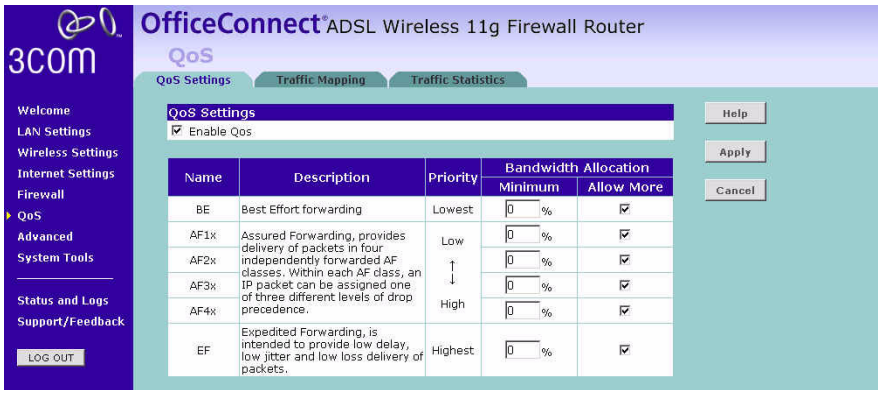
Quality of Service

The QoS (Quality of Service) function allows you to differentiate your network traffic and provide it with high-priority forwarding service.

QoS Settings

The bandwidth gap between LAN and WAN may significantly degrade performance of critical network applications, such as VoIP, gaming, and VPN. This QoS function allows you to classify traffic of applications and provides them with differentiated services (Diffserv).

Figure 67 QoS Settings Screen

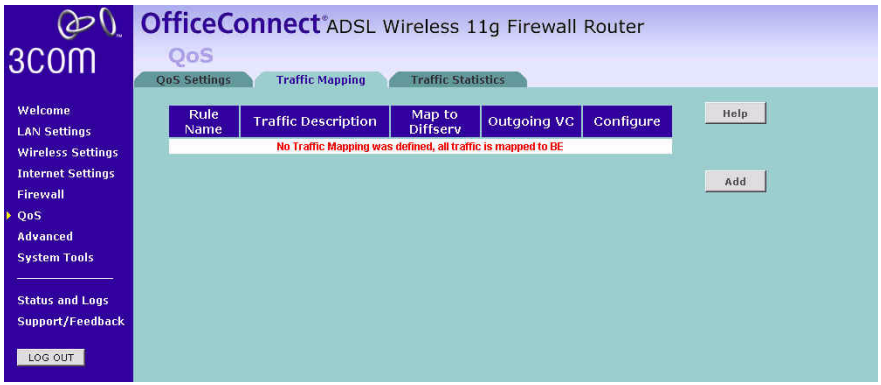


Define the minimum percentage of bandwidth for each type of traffic.

Traffic Mapping

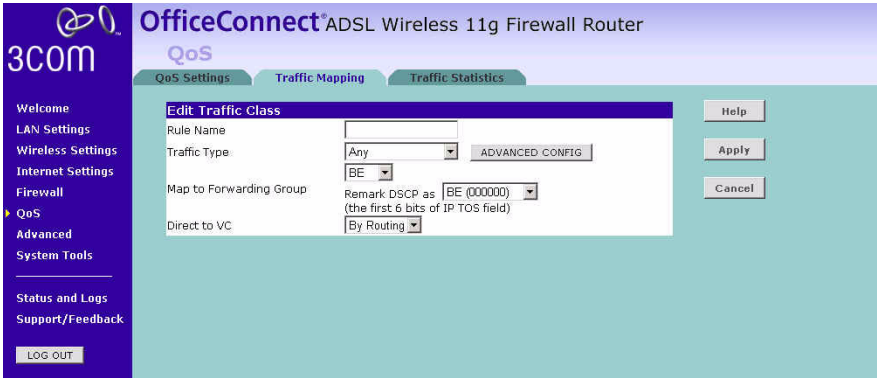
You can define up to 16 rules to classify traffic into Diffserv forwarding groups and outgoing VCs in this screen.

Figure 68 Traffic Mapping screen



Click *Add* to add a new traffic class rule (see Figure 69).

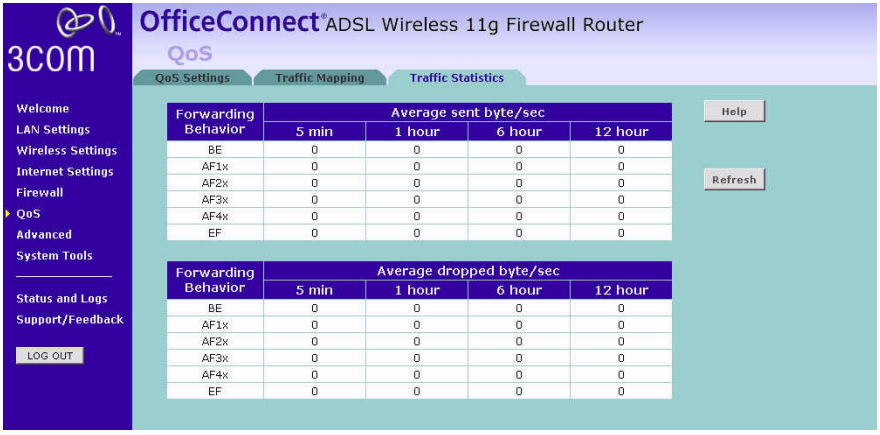
Figure 69 Add New Traffic Class Rule Screen



Traffic Statistics

This screen shows the WAN outbound traffic statistics of all the Diffserv forwarding groups in the last 12 hours. This screen automatically updates every 5 minutes.

Figure 70 Traffic Statistics Screen



Forwarding Behavior	Average sent byte/sec			
	5 min	1 hour	6 hour	12 hour
BE	0	0	0	0
AF1x	0	0	0	0
AF2x	0	0	0	0
AF3x	0	0	0	0
AF4x	0	0	0	0
EF	0	0	0	0

Forwarding Behavior	Average dropped byte/sec			
	5 min	1 hour	6 hour	12 hour
BE	0	0	0	0
AF1x	0	0	0	0
AF2x	0	0	0	0
AF3x	0	0	0	0
AF4x	0	0	0	0
EF	0	0	0	0

Advanced

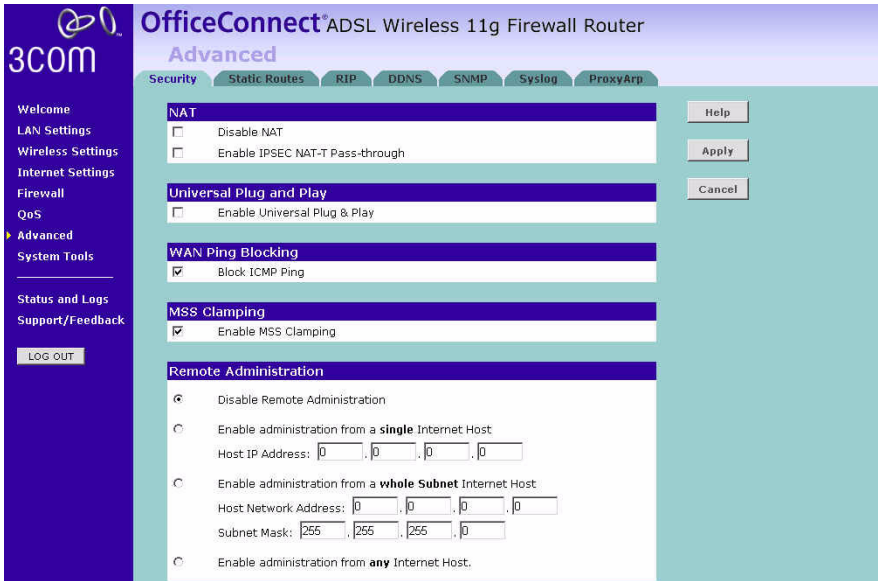
From the Advanced screen, you can configure:

- Security
- Static Routes
- RIP
- DDNS
- SNMP
- Syslog
- Proxy Arp

Security

Use the Security screen to set the advanced security settings for the Router.

Figure 71 Security Screen



- *NAT* — Before you enable NAT (Network Address Translation), make sure you have changed the administrator password. NAT is the method by which the Router shares the single IP address assigned by your ISP with the computers on your network.

  This function should only be disabled by advanced users, and if your ISP assigns you multiple IP addresses or you need NAT disabled for an advanced system configuration. If you have a single IP address and

you turn NAT off, the computers on your network will not be able to access the Internet. Other problems may also occur.

- IPSEC NAT-T Pass-through — NAT-T (NAT Traversal) is an Internet Draft proposed to IETF in order to help the problems associated with passing IPsec traffic through NAT Routers. For NAT-T to work, both ends of the connection need to support this function. Ensure that you select NAT-T only if it is needed as it will reduce LAN-WAN throughput. This Router supports NAT-T draft 2 implementation.

- Universal Plug and Play — This is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are Universal Plug and Play compliant. Some applications require the Router's firewall to be configured in a specific way to operate properly. This usually requires opening TCP and UDP ports and in some instances setting trigger ports. An application that is Universal Plug and Play compliant has the ability to communicate with the Router, basically "telling" the Router which way it needs the firewall configured. The Router ships with the Universal Plug and Play feature disabled. If you are using any applications that are Universal Plug and Play compliant, and want to take advantage of the Universal Plug and Play features, you can enable this feature. Simply check the *Enable Universal Plug and Play* checkbox. Click *Apply* to save the change.

- WAN Ping Blocking — Computer hackers use what is known as "Pinging" to find potential victims on the Internet. By pinging a specific IP address and receiving a response from the IP address, a hacker can determine that something of interest might be there. The Router can be set up so it will not respond to an Internet Control Message Protocol (ICMP) Ping from the outside. This heightens the level of security of your Router. To turn off the ping response, check *Block ICMP Ping* and click *Apply;* the Router will not respond to an ICMP ping from the Internet.

- MSS Clamping — You might not be able to browse some Web sites or to send email messages that contain attachments from an Internet Connection Sharing client computer if your outbound connection is through a Windows XP-based Internet Connection Sharing host computer that uses Point-to-Point Protocol over Ethernet (PPPoE). This issue may occur if the Windows XP-based Internet Connection Sharing host computer uses a smaller Maximum Transmission Unit (MTU) size on the WAN interface (the PPPoE connection to the Internet) than it uses on the private interface (the Ethernet connection to the Internet Connection Sharing client). If a packet is larger than

the MTU size on the WAN interface, the client sends an Internet Control Message Protocol (ICMP) error to the external server to request that the server negotiate the TCP Maximum Segment Size (MSS). However, this message may be blocked by some firewalls. When this occurs, the packet is dropped. To allow the message to go through the firewall, enable MSS Clamping. MSS clamping will make Internet Connection Sharing set the MSS value low enough to match the external interface.

- Remote Administration — This feature allows you to make changes to your Router's settings from anywhere on the Internet. Four options are available:
  - If you do not want to use this feature, select *Disable Remote Administration*.
  - Select *Enable administration from a single Internet Host*, and enter the IP address, to allow only one computer to use the remote administration. This is more secure, as only the specified IP address will be able to manage the Router.
  - Select *Enable administration from a whole Subnet Internet Host*, and enter the IP address and subnet mask, to allow PCs from that specific subnet group to use the remote administration.
  - Select *Enable administration from any Internet Host*, this allows any computer to access the Router remotely.

Before you enable this function, ensure that you have set the Administration Password.

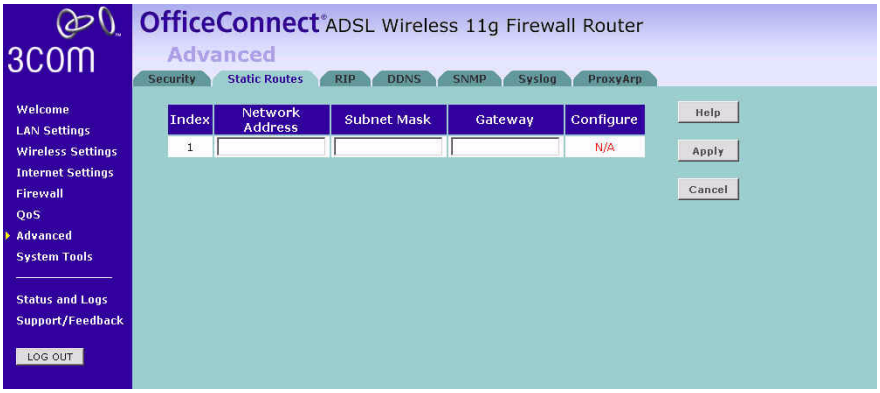
Static Routes

You can configure static routes in this screen.

To add a static route entry to the table, click *Add*.

To change an existing entry, click *Edit*. To delete an entry, click *Delete*.

Figure 72 Static Routes Screen



This screen shows a list of current static route entries. For each entry, the following information is displayed:

- *Index* — the index of the entry.
- *Network Address* — the network address of the route.
- *Subnet Mask* — the subnet mask of the route.

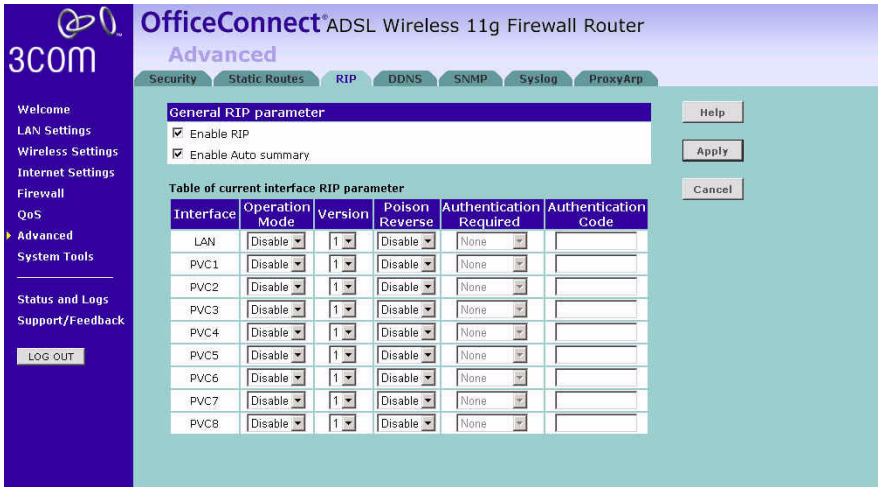
A network address of 0.0.0.0 and a subnet mask of 0.0.0.0 indicates the default route.

- *Gateway* — the router used to route data to the network specified by the network address.

After you have finished making changes to the table, click *Apply*.

RIP RIP (Routing Information Protocol) - RIP allows the network administrator to set up routing information on one RIP-enabled device and send that information to all RIP-enabled devices on the network.

Figure 73 RIP Parameter Screen



You can set up RIP independently on both LAN and WAN interfaces.

1. Check the *Enable RIP* checkbox.
2. Check the *Enable Auto summary* checkbox. Auto summarization sends simplified routing data to other RIP-enabled devices rather than full routing data.
3. Select the *Operation Mode*:
   - *Disabled* — RIP is not enabled for the WAN or LAN interface.
   - *Enabled* — RIP is enabled for the WAN or LAN interface. The router will transmit RIP update information to other RIP-enabled devices.
   - *Silent* — RIP is enabled, however the Router only receives RIP update messages, it will not transmit any messages itself.
4. In the *Version* field, select *1* or *2*.

3Com recommends that you only use RIPv1 if there is an existing RIP-enabled device on your network that does not support RIPv2. In all other cases, you should use RIPv2.

5. Use the *Poison Reverse* drop-down menu to enable or disable *Poison Reverse* on the Router. Enabling *Poison Reverse* on your Router allows it to indicate to other RIP-enabled devices that they have both routes that point to each other, preventing data loops.
6. Use the *Authentication Required* field to choose the mode of authentication:
   - *None* — Switches off authentication on the specified interface.
   - *Password* — An unencrypted text password that needs to be set on all RIP-enabled devices connected to this Router. RIP information is not shared between devices whose passwords do not match.
7. In the *Authentication Code* field, enter the password that is required if the *Password* option has been selected.
8. Click *Apply*.

DDNS

The Router provides a list of dynamic DNS providers for you to choose from. Dynamic Domain Name Server (DDNS) enables you to map a static domain name to a dynamic IP address.

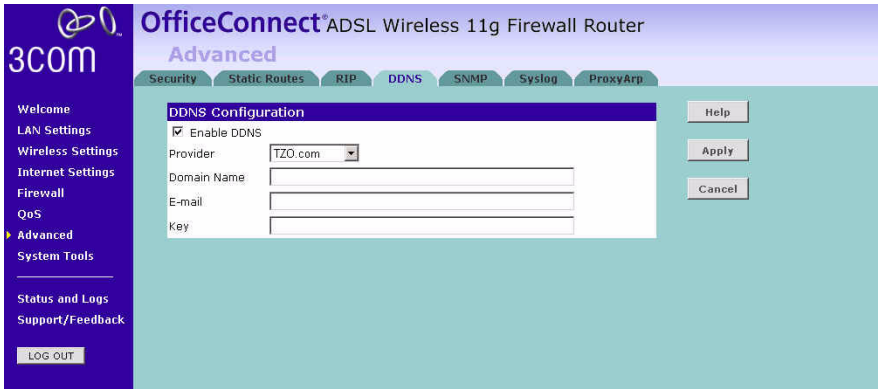
The Router supports five DDNS providers:

- DynDNS.org
- TZO.com
- Dt DNS.com
- No-IP.com
- Zoneedit.com

Before you set up DDNS, you must obtain an account, password or key and static domain name from your DDNS provider.

DDNS is disabled by default.

Figure 74 Dynamic Domain Name Server (DDNS) Screen



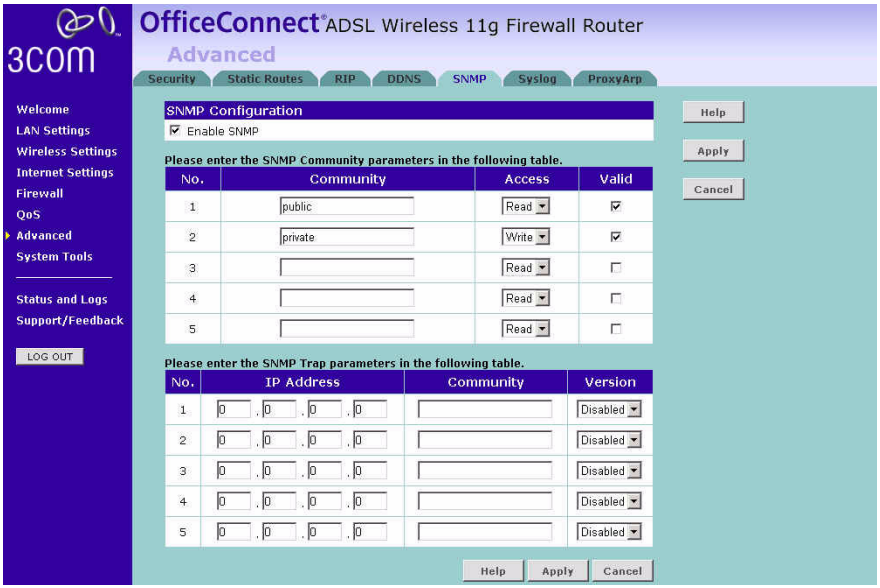
1 Check *Enable DDNS*.

2 Select the provider, and then enter the necessary information provided by your DDNS provider.

3 Click *Apply*.

SNMP SNMP (Simple Network Management Protocol) allows remote management of your Router by a PC that has an SNMP management agent installed.

Figure 75 SNMP Screen



To Configure SNMP Community:

1. In the *Community* column, enter the name of the SNMP communication channel. Your SNMP management agent needs to be configured with this name so that it can communicate with your Router.
2. In the *Access* column, select *Read* to allow the management agent to collect data (for example, bandwidth usage) from your Router. Select *Write* to allow the management agent to change the configuration of your Router.
3. Check the appropriate *Valid* checkbox to enable the communication channel.

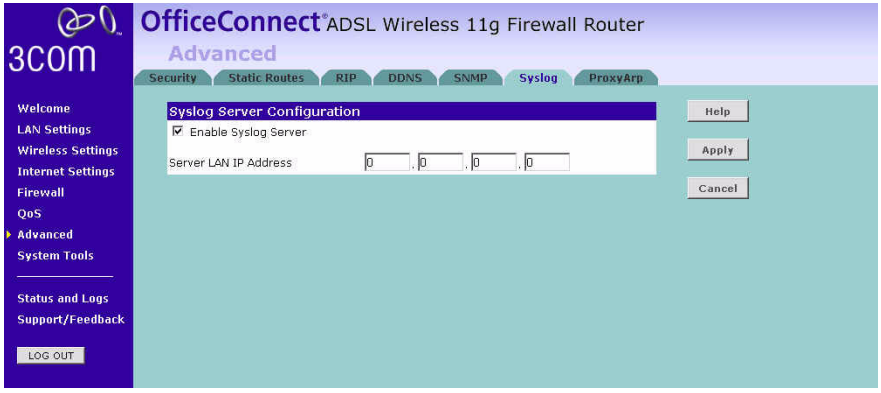
You can configure your Router to send status messages to the SNMP management agent if a problem occurs on the network. To configure SNMP traps:

1. In the *IP Address* field, enter the IP address of the PC to which you want your Router to send status messages.
2. In the *Community* field, enter the name of the SNMP communication channel to which you want your Router to send status messages.
3. Set the *Version* field to match the version of trap messaging that your SNMP management agent supports. The Router supports V1 and V2c trap messaging.

Syslog

Using third party syslog software, this Syslog Server tool will automatically download the Router log to the specified server IP address.

Figure 76 Syslog Server Screen

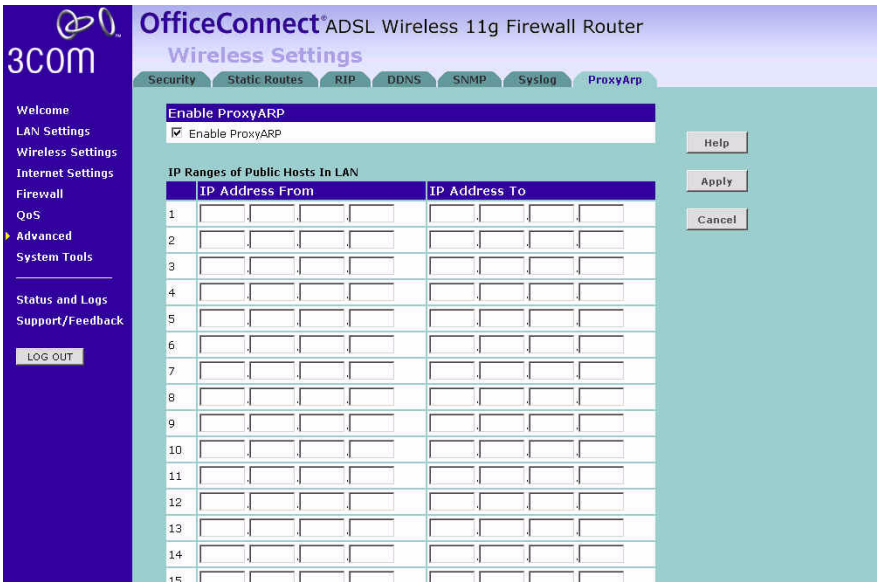


1. Check the *Enable Syslog Server* checkbox.
2. Enter the *Server LAN IP Address* in the space provided.
3. Click *Apply*.

Proxy ARP

Proxy ARP is the technique in which one host, usually a Router, answers ARP requests intended for another machine. By "faking" its identity, the Router accepts responsibility for routing packets to the "real" or intended destination. This heightens the security for your network.

Figure 77 Proxy ARP Screen



Enter the corresponding IP address in the *IP Address From* and *IP Address To* fields.

System Tools

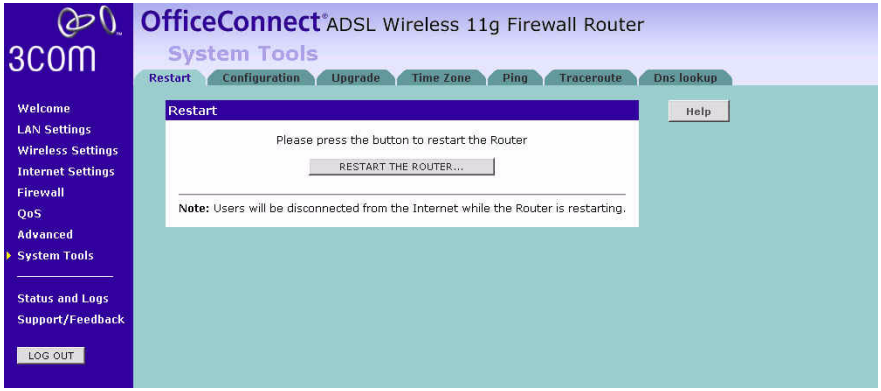
These screens allow you to manage different parameters of the Router and perform certain administrative functions.

Restart Router

Sometimes it may be necessary to restart (or reboot) the Router. Restarting the Router from this screen will not delete any of your configuration settings.

Click the *Restart the Router* button to restart the Router.

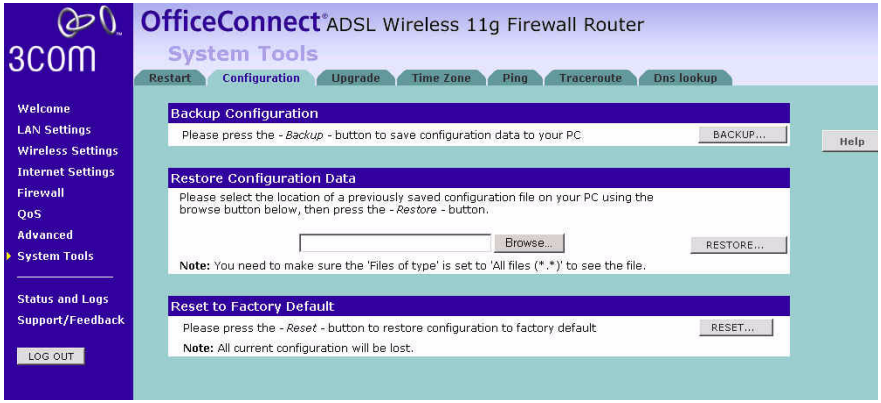
Figure 78 Restart Router Screen



Configuration

Use this configuration screen to backup, restore or reset the configuration details of the Router.

Figure 79 Configuration Screen

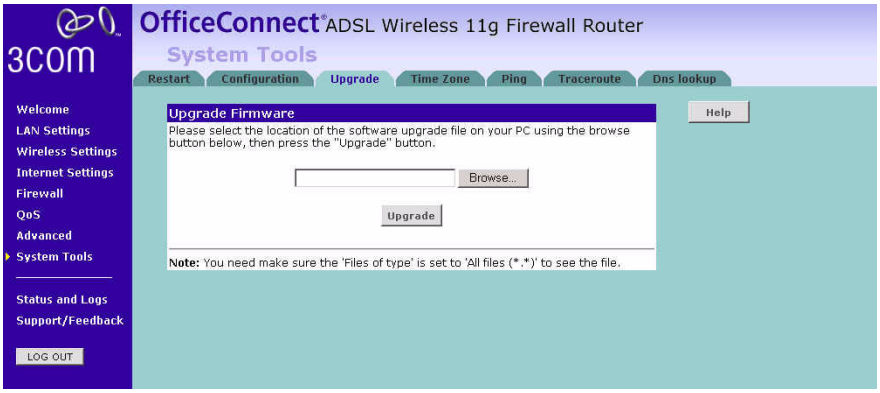


- Backup Configuration — You can save your current configuration by clicking the *Backup* button. Saving your configuration will allow you to restore it later if your settings are lost or changed. It is recommended that you backup your current configuration before performing a firmware update.
- Restore Configuration Data — The Restore Settings option will allow you to restore a previously saved configuration. Please select the configuration file using the *Browse* button and click *Restore*.
- Reset to Factory Default — Using this option will reset all of the settings in the Router to the factory default settings. It is recommended that you backup your settings before you restore all of the defaults. To restore the factory default settings, click *Reset*.

Upgrade

From time to time 3Com may release new versions of the Router's firmware. Firmware updates contain improvements and fixes to problems that may have existed.

Figure 80 Upgrade Screen

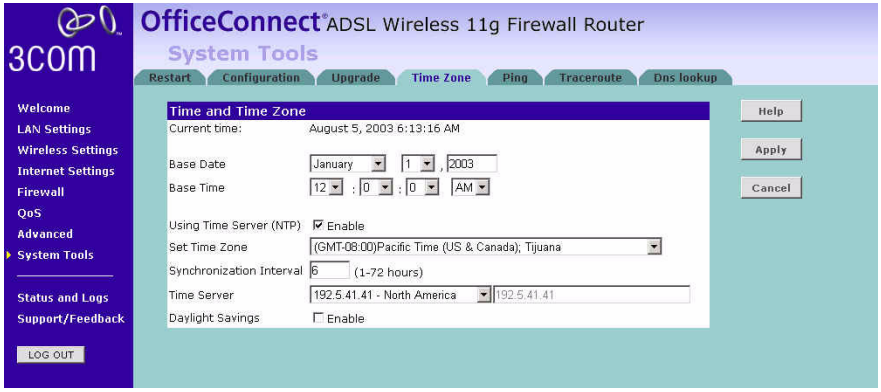


Please download the firmware file to your PC first, and then click *Browse* and select the firmware file. Click *Upgrade* to upload the firmware to the Router.

Time Zone

You can set the time settings for the Router on this screen.

Figure 81 Time Zone Screen

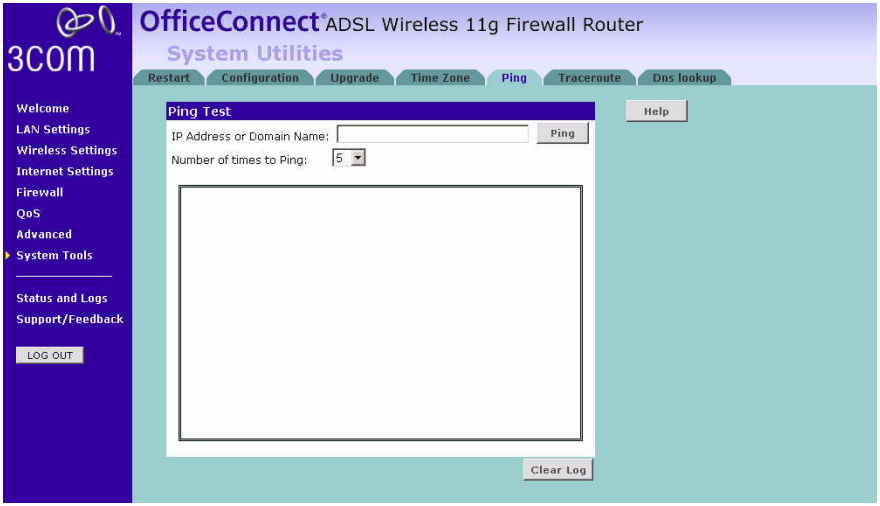


The Router keeps time by connecting to a Network Time Protocol (NTP) server. This allows the Router to synchronize the system clock to the Internet. The synchronized clock in the Router is used to record the security log and control client filtering. Select the time zone that you reside in. If you reside in an area that observes Daylight Saving, then check the checkbox for E*nable* Daylight Saving. The system clock may not update immediately. Allow at least 15 minutes for the Router to contact the time servers on the Internet and get a response. You cannot set the clock yourself.

You can specify which NTP servers the Router will use to update the system clock, although doing this should only be necessary if you are experiencing difficulty.

Ping The ping tool is used to test if the network is working properly.

Figure 82 Ping Screen



1 Enter the IP address or domain name in the *IP Address or Domain Name* field, and click *Ping*.

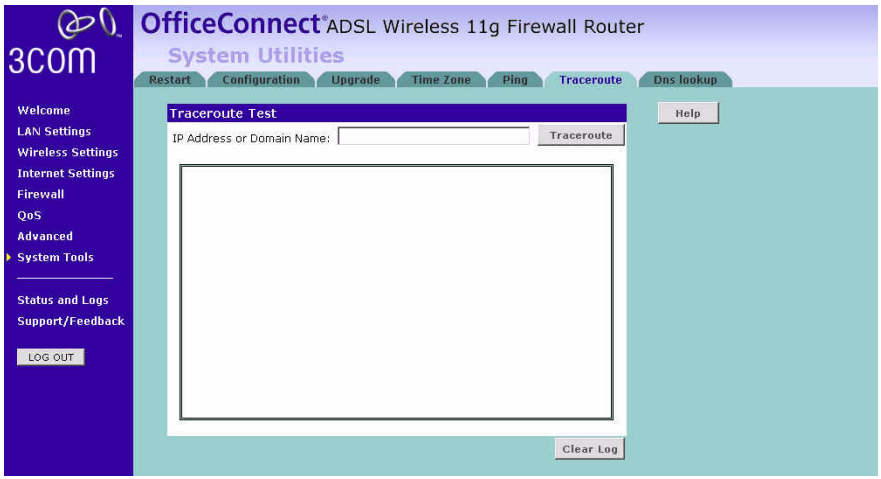
2 Select from the *Number of times to Ping* drop-down menu.

3 The Router keeps a log of the ping test, click *Clear Log* to delete the records.

Traceroute

Traceroute is the program that shows you the route over the network between two systems, listing all the intermediate routers a connection must pass through to get to its destination. It can help you determine why your connections to a given server might be poor, and can often help you figure out where exactly the problem is. It also shows you how systems are connected to each other, letting you see how your ISP connects to the Internet as well as how the target system is connected.

Figure 83 Traceroute Screen



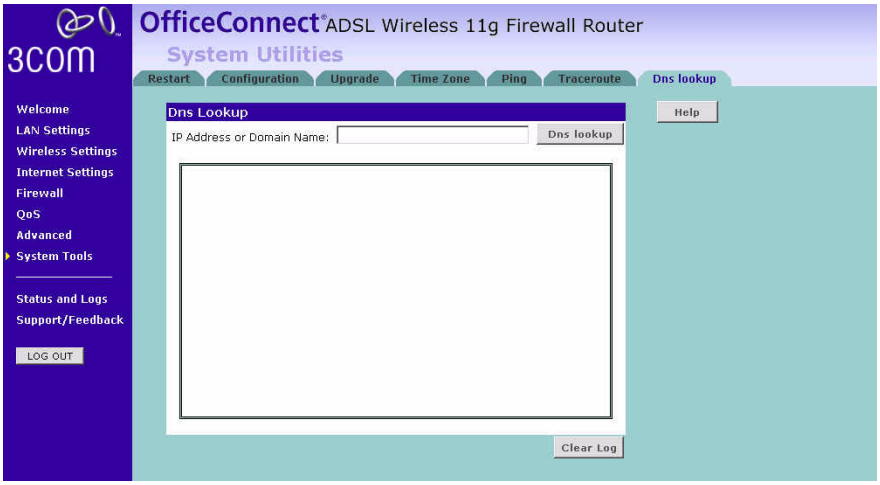
1 Enter the IP address or domain name in the *IP Address or Domain Name* field, and click *Traceroute*.

2 The Router keeps a log of the traceroute test, click *Clear Log* to delete the records.

DNS Lookup

DNS Lookup is the process of resolving an IP address (i.e. 192.168.11.137) to a host name (i.e. xxxcompany.net).

Figure 84 DNS Lookup Screen



1 Enter the IP address or domain name in the *IP Address or Domain Name* field, and click *Dns lookup.*

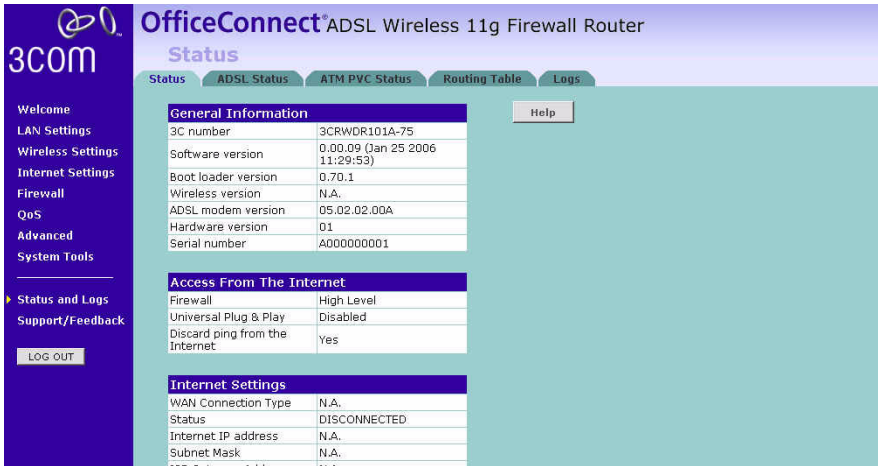
2 The Router keeps a log of the DNS lookup test, click *Clear Log* to delete the records.

Status and Logs

You can use the Status Screen to view version numbers for your Router's software and hardware and check the status of connections to WAN, LAN and WLAN interfaces.

Status

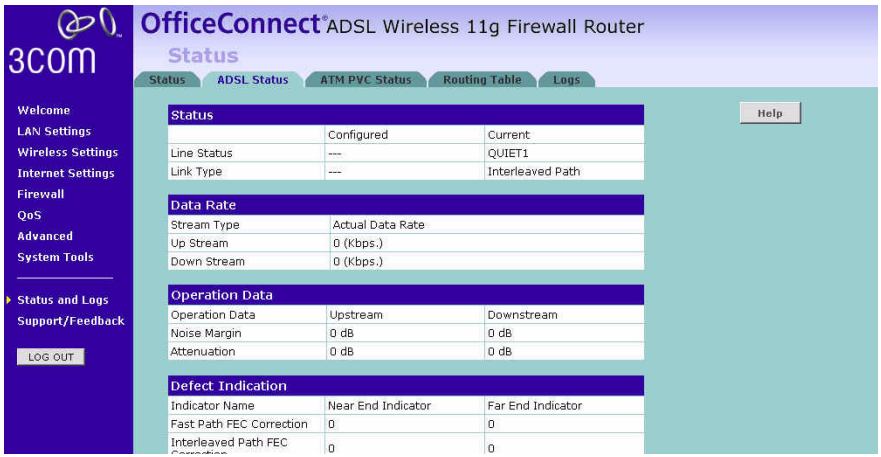
Figure 85 Status Screen



This screen shows Router status and statistics.

ADSL Status

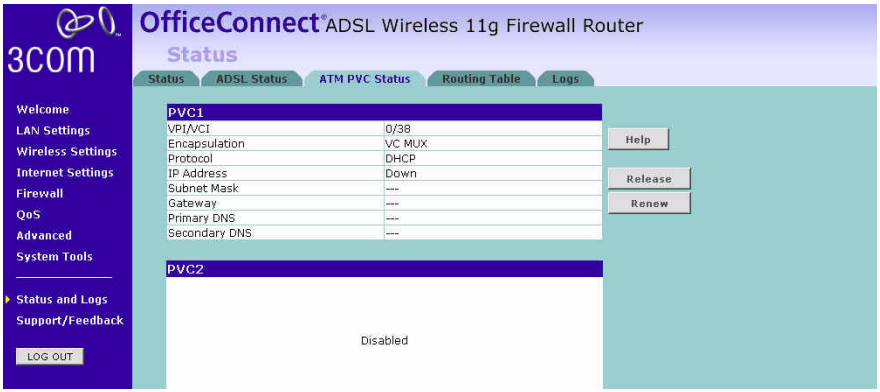
Figure 86 ADSL Status Screen



This screen shows ADSL modem status and statistics.

ATM PVC Status

Figure 87 ATM PVC Status Screen



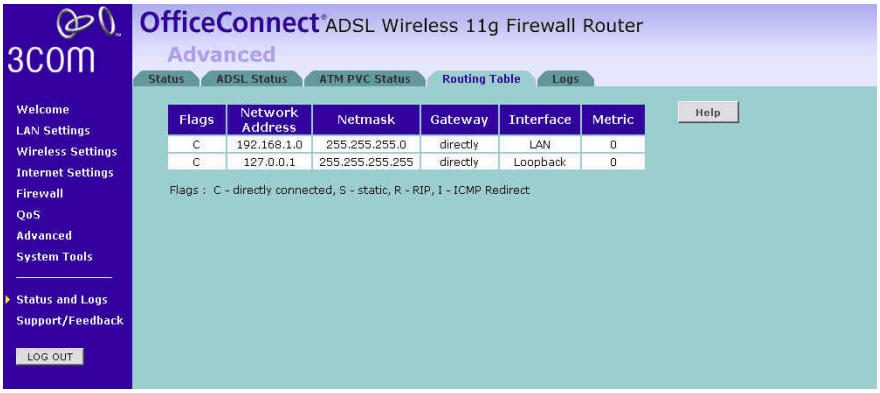
This screen shows ATM PVC status and statistics.

- Click *Release* to release the IP address from your ISP.
- Click *Renew* to obtain the IP address from your ISP.

Routing Table

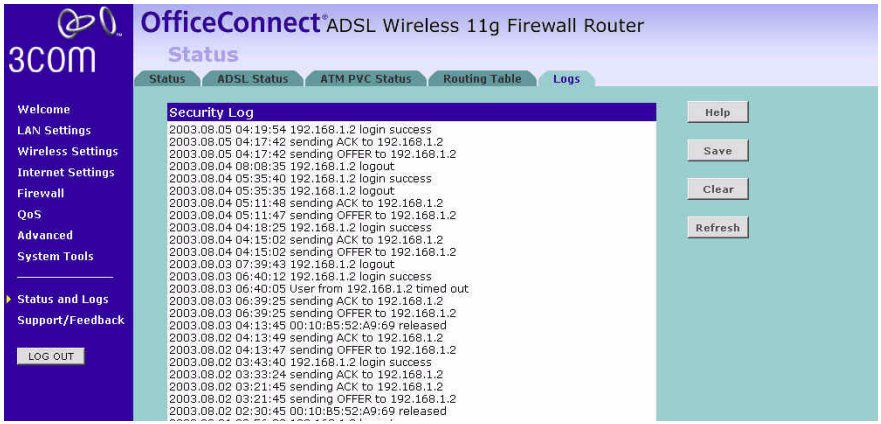
This screen displays details for the default routing used by your Router and any routing created using Static Routing or RIP.

Figure 88 Routing Table Screen



Logs This screen shows any attempts that have been made to gain access to your network as well as the system activities.

Figure 89 Logs Screen



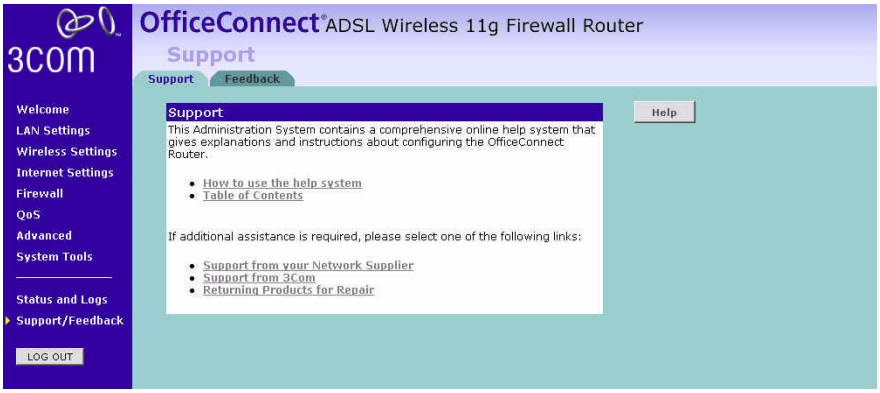
- Click *Help* to view the help file.
- Click *Save* to save the log to the hard disk as a text file. When prompted for a location to save the file to, specify a filename and location, and then click *OK*.
- Click *Clear* to clear the log (note that all current entries will be erased).
- Click *Refresh* to update the record.

Support/Feedback

You can use the Support/Feedback screen to obtain support and help, and also provide feedback to 3Com.

Support

Figure 90 Support Screen

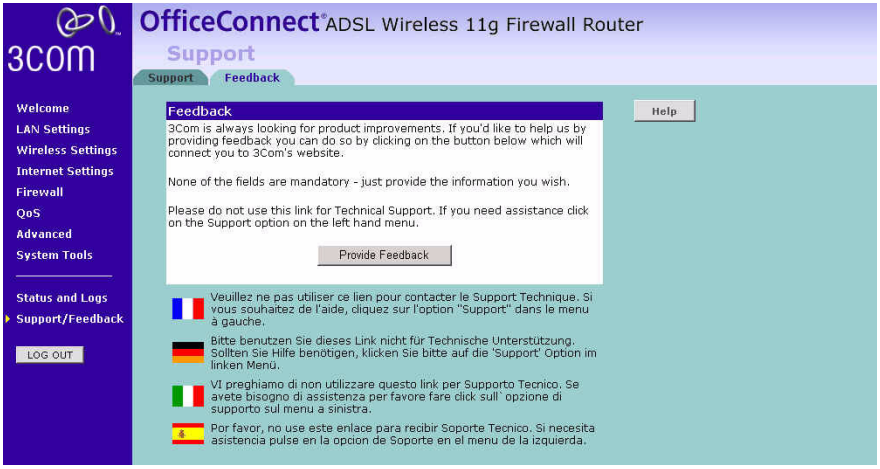


This screen shows support information.

Feedback

To provide feedback to 3Com, please click *Provide Feedback*, and this will connect you to the 3Com Web site.

Figure 91 Feedback Screen



This screen shows feedback information.

6 TROUBLESHOOTING

Basic Connection Checks

- Check that the Router is connected to your computers and to the telephone line, and that all the equipment is powered on. Check that the LAN Status and SYNC LEDs on the Router are illuminated, and that any corresponding LEDs on the NIC are also illuminated.
- Ensure that the computers have completed their start-up procedure and are ready for use. Some network interfaces may not be correctly initialized until the start-up procedure has completed.
- If the link status LED does not illuminate for a port that is connected, check that you do not have a faulty cable. Try a different cable.

Browsing to the Router Configuration Screens

If you have connected your Router and computers together but cannot browse to the Router configuration screens, check the following:

- Confirm that the physical connection between your computer and the Router is OK, and that the LAN Status LEDs on the Router and network adapter are illuminated and indicating the same speed (10Mbps or 100Mbps). Some NICs do not have status LEDs, in which case a diagnostic program may be available that can give you this information.
- Ensure that you have configured your computer as described in Chapter 3. Restart your computer while it is connected to the Router to ensure that your computer receives an IP address.
- When entering the address of the Router into your web browser, ensure that you use the full URL including the http:// prefix (e.g. **`http://192.168.1.1`**).
- Ensure that you do not have a Web proxy enabled on your computer. Go to the *Control Panel* and click on *Internet Options*. Select the *Connections* tab and click on the *LAN Settings* button at the bottom. Make sure that the *Proxy Server* option is unchecked.

- If you cannot browse to the Router, use the *winipcfg* utility in Windows 98/ME to verify that your computer has received the correct address information from the Router. From the *Start* menu, choose *Run* and then enter **`winipcfg`**. Check that the computer has an IP address of the form 192.168.1.xxx (where xxx is in the range 2-254), the subnet mask is 255.255.255.0, and the default Router is 192.168.1.1 (the address of the Router). If these are not correct, use the *Release* and *Renew* functions to obtain a new IP address from the Router. Under Windows 2000 and Windows XP, use the *ipconfig* command-line utility to perform the same functions.

Connecting to the Internet

If you can browse to the Router configuration screens but cannot access Web sites on the Internet, check the following:

- Confirm that the physical connection between the Router and the telephone line is OK, and that the DSL LED on the Router is illuminated.
- Ensure that you have entered the correct information into the Router configuration screens as required by your Internet Service Provider. Use the Internet Settings screen to verify this.
- Check that the PPPoE or PPPoA user name and password are correct.
- Ensure that your computers are not configured to use a Web proxy. On Windows computers, this can be found under *Control Panel* > *Internet Options* > *Connections*.

Forgotten Password and Reset to Factory Defaults

If you can browse to the Router configuration screen but cannot log on because you do not know or have forgotten the password, follow the steps below to reset the Router to its factory default configuration.

CAUTION: *All your configuration changes will be lost, and you will need to run the configuration wizard again before you can re-establish your Router connection to the Internet. Also, other computer users will lose their network connections whilst this process is taking place, so choose a time when this would be convenient.*

1. Power off the Router.
2. Disconnect all your computers and the telephone line from the Router.
3. Re-apply power to the Router, and wait for it to finish booting up.

4 Press and hold the *Reset* button on the rear panel (see "The rear panel (Figure 4) of the Router contains four LAN ports, one ADSL port, a reset button, a power OK LED, and a power adapter socket." on page 16) for 5 seconds.

5 The Router will restart, and when the start-up sequence has completed, browse to:

```
http://192.168.1.1
```

and run the configuration wizard. You may need to restart your computer before you attempt this.

6 When the configuration wizard has completed, you may reconnect your network as it was before.

Wireless Networking

- Ensure that you have an 802.11b or 802.11g wireless adapter for each wireless computer, and that it is correctly installed and configured. Verify that each wireless computer has either Windows 98 or higher or MAC OS 8.5 or higher.
- Verify that your wireless computers are configured to work in Infrastructure mode and not Ad Hoc mode. The Router contains an Access Point that is designed to operate in Infrastructure mode. Ad Hoc mode is not supported by the Router.
- If you have a wired and a wireless NIC in the same computer, ensure that the wired NIC is disabled.
- Check the status of the WLAN LED, it should be lit if wireless is enabled and will flash when there is wireless activity. If not lit go to "Wireless Settings" on page 43 and enable wireless networking.
- Ensure that the TCP/IP settings for all devices are correct.
- Ensure that the Wireless Clients are using the same SSID or Service Area Name as the Router. The SSID is case-sensitive.
- Ensure that the encryption method and level that you use on your clients are the same as those configured on the Router. The Router cannot simultaneously support WPA and WEP encryption.
- Ensure that you have the wireless computer enabled in the list of allowed MAC addresses if you are using MAC Address Filtering on the Router.
- If you are having difficulty connecting or are operating at a low speed try changing the antenna positions on the rear of the Router.

For more effective coverage you can try reorientating your antennae. Place one antenna vertically and one horizontally to improve coverage. Additionally consider moving the wireless computer closer to the Router to confirm that the building structure or fittings are not adversely affecting the connectivity. If this resolves the problem consider relocating the wireless computer or the Router, or trying a different channel on the Router.

- Sources of interference: The 2.4Ghz ISM band is used for 802.11b and 802.11g. This is generally a licence free band for low power applications, and you may have other devices at your location that operate in this frequency band. You should take care to ensure that there are no devices, like microwave ovens for example, close to the Router or wireless computers as this could affect receiver sensitivity and reduce the performance of your network. If you are unsure try relocating both the wireless computers and the Router to establish whether this problem exists.
- Most wireless computer adapters will scan the channels for the wireless Router. If a wireless computer has not located the Router then try initiating a search manually if the client software supports this feature or manually set the channel on your wireless computer to correspond to the Router channel number. Please refer to your wireless computer adapter documentation and vendor to do this.
- Speed of connection: The 802.11b and 802.11g standards will automatically choose the best speed depending on the quality of your connection. As the signal quality weakens then the speed falls back to a lower speed. The speeds supported by 802.11g are 54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps and 6 Mbps. The speeds supported by 802.11b are 11 Mbps, 5.5 Mbps, 2 Mbps and 1 Mbps. In general the closer you are to the Router the better the speed. If you are not achieving the speed you had anticipated then try moving the antenna on the Router or moving the wireless computer closer to the Router. In an ideal network the Router should be located in the centre of the network with wireless computers distributed around it. Applications are generally available with the computer wireless card to carry out a site survey. Use this application to find the optimal siting for your wireless computer. Consult your Computer Card documentation and vendor for more details.

Recovering from Corrupted Software

If the system software has become corrupted, the Router will enter a "recovery" state; DHCP is enabled, and the LAN IP address is set to 192.168.1.1. Follow the instructions below to upload a new copy of the system software to a Router unit in this state.

Ensure that one of your computers has a copy of the new software image file stored on its hard disk or available on CD-ROM.

The latest software is available on 3Com's Web site at:

`www.3com.com`

1. Remove power from the Router and disconnect the telephone line and all your computers, except for the one computer with the software image.
2. You will need to reconfigure this computer to obtain an IP address automatically (see "Obtaining an IP Address Automatically" on page 23).
3. Restart the computer, and re-apply power to the Router.
4. Using the Web browser on the computer, enter the following URL in the location bar:

   `http://192.168.1.1`.

   This will connect you to the Recovery utility in the Router.
5. Follow the on-screen instructions. Enter the path and filename of the software image file.
6. When the upload has completed, the Router will restart, run the self-test and, if successful, resume normal operation.
7. Refer to the Installation Guide to reconnect your Router to the telephone line and the computers in your network. Do not forget to reconfigure the computer you used for the software upload.

   If the Router does not resume normal operation following the upload, it may be faulty. Contact your supplier for advice.

Frequently Asked Questions

How do I reset the Router to Factory Defaults?

See "Forgotten Password and Reset to Factory Defaults" on page 104.

How many computers on the LAN does the Router support?

A maximum of 253 computers on the LAN are supported.

How many wireless clients does the Router support?

A maximum of 128 wireless clients are supported.

There are only 4 LAN ports on the Router. How are additional computers connected?

You can expand the number of connections available on your LAN by using hubs, switches and wireless access points connected to the Router. 3Com wireless access points and hubs and switches provide a simple, reliable means of expanding your network; contact your supplier for more information, or visit:

http://www.3com.com/

Does the Router support virtual private networks (VPNs)?

The Router supports VPN passthrough, which allows VPN clients on the LAN to communicate with VPN hosts on the Internet. It is also possible to set up VPN hosts on your LAN that clients elsewhere on the Internet can connect to, but this is not a recommended configuration.

Where can I download software updates for the Router?

Updates to the Router software are posted on the 3Com support Web site, accessible by visiting:

http://www.3com.com

A IP ADDRESSING

The Internet Protocol Suite

The Internet Protocol suite consists of a well-defined set of communications protocols and several standard application protocols. Transmission Control Protocol/Internet Protocol (TCP/IP) is probably the most widely known and is a combination of two of the protocols (IP and TCP) working together. TCP/IP is an internationally adopted and supported networking standard that provides connectivity between equipment from many vendors over a wide variety of networking technologies.

Managing the Router over the Network

To manage a device over the network, the Router must be correctly configured with the following IP information:

- An IP address
- A Subnet Mask

IP Addresses and Subnet Masks

Each device on your network must have a unique IP address to operate correctly. An IP address identifies the address of the device to which data is being sent and the address of the destination network. IP addresses have the format n.n.n.x where n is a decimal number between 0 and 255 and x is a number between 1 and 254 inclusive.

However, an IP address alone is not enough to make your device operate. In addition to the IP address, you need to set a subnet mask. All networks are divided into smaller sub-networks and a subnet mask is a number that enables a device to identify the sub-network to which it is connected.

For your network to work correctly, all devices on the network must have:

- The same sub-network address.
- The same subnet mask.

The only value that will be different is the specific host device number. This value must always be unique.

An example IP address is '192.168.100.8'. However, the size of the network determines the structure of this IP address. In using the Router, you will probably only encounter two types of IP address and subnet mask structures.

Type One

In a small network, the IP address of '192.168.100.8' is split into two parts:

- Part one ('192.168.100') identifies the network on which the device resides.
- Part two ('.8') identifies the device within the network.

This type of IP address operates on a subnet mask of '255.255.255.0'.

See Table 3 for an example about how a network with three computers and a Router might be configured.

Table 3 IP Addressing and Subnet Masking

Device	IP Address	Subnet Mask
PC 1	192.168.100.8	255.255.255.0
PC 2	192.168.100.33	255.255.255.0
PC 3	192.168.100.188	255.255.255.0
Router	192.168.100.72	255.255.255.0

Type Two

In larger networks, where there are more devices, the IP address of '192.168.100.8' is, again, split into two parts but is structured differently:

- Part one ('192.168') identifies the network on which the device resides.
- Part two ('.100.8') identifies the device within the network.

This type of IP Address operates on a subnet mask of '255.255.0.0'.

See Table 4 for an example about how a network (only four computers represented) and a Router might be configured.

Table 4 IP Addressing and Subnet Masking

Device	IP Address	Subnet Mask
PC 1	192.168.100.8	255.255.0.0
PC 2	192.168.201.30	255.255.0.0
PC 3	192.168.113.155	255.255.0.0
PC 4	192.168.002.230	255.255.0.0
Router	192.168.002.72	255.255.0.0

How does a Device Obtain an IP Address and Subnet Mask?

There are three different ways to obtain an IP address and the subnet mask. These are:

- Dynamic Host Configuration Protocol (DHCP) Addressing
- Static Addressing
- Automatic Addressing (Auto-IP Addressing)

DHCP Addressing

The Router contains a DHCP server, which allows computers on your network to obtain an IP address and subnet mask automatically. DHCP assigns a temporary IP address and subnet mask which gets reallocated once you disconnect from the network.

DHCP will work on any client Operating System such as Windows 95, Windows 98, Windows NT 4.0, Windows 2000 and Windows XP. Also, using DHCP means that the same IP address and subnet mask will never be duplicated for devices on the network. DHCP is particularly useful for networks with large numbers of users on them.

Static Addressing

You must enter an IP Address and the subnet mask manually on every device. Using a static IP and subnet mask means the address is permanently fixed.

Auto-IP Addressing

Network devices use automatic IP addressing if they are configured to acquire an address using DHCP but are unable to contact a DHCP server. Automatic IP addressing is a scheme where devices allocate themselves

an IP address at random from the industry standard subnet of 169.254.x.x (with a subnet mask of 255.255.0.0). If two devices allocate themselves the same address, the conflict is detected and one of the devices allocates itself a new address.

Automatic IP addressing support was introduced by Microsoft in the Windows 98 operating system and is also supported in Windows 2000 and Windows XP.

B TECHNICAL SPECIFICATIONS

This section lists the technical specifications for the OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router.

OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router

Interfaces

DSL connection

LAN connection — four 10 Mbps/100 Mbps dual speed Ethernet ports (10BASE-T/100BASE-TX)

WLAN Interfaces

Standard IEEE 802.11g, Direct Sequence Spread Spectrum (DSSS)
Transmission rate: 54 Mbps, automatic fallback to 48, 36, 24, 18, 12, or 6 Mbps
Maximum channels: 13
Range up to 304.8m (1000ft)
Sensitivity: 6, 12, 18, 24, 36, 48 Mbps: -85 dBm;
54 Mbps -66 dBm typical
Modulation: CCK, BPSK, QPSK, OFDM
Encryption: 40/64 bit WEP, 128 bit WEP, WPA
Maximum clients: 128
O/P Power: 18dBm

Standard IEEE 802.11b, Direct Sequence Spread Spectrum (DSSS)
Transmission rate: 11Mbps, automatic fallback to 5.5, 2, or 1 Mbps
Maximum channels: 13
Range up to 304.8m (1000ft)
Sensitivity: 1, 2, 5.5 Mbps: -85 dBm; 11 Mbps -82 dBm typical
Modulation: CCK, BPSK, QPSK
Encryption: 40/64 bit WEP, 128 bit WEP, WPA
Maximum clients: 128
O/P Power 16dBm

Operating Temperature

0 °C to 40 °C (32 °F to 105 °F)

Power

8VA, 25 BThU/hr

Humidity

0% to 90% (non-condensing) humidity

Dimensions

- Width = 220 mm (8.7 in.)
- Depth = 133 mm (5.2 in.)
- Height = 38 mm (1.5 in.)

Weight

Approximately 550 g (1.1 lbs)

Standards

Functional:	ISO 8802/3 IEEE 802.3 IEEE 802.11b, 802.11g
Safety:	EN 60950-1: 2001 UL 60950-1 IEC 60950-1: 2001
EMC:	FCC Part15 B EN 55022 EN 55024 EN 61000 EN 301 489-1 ICES-003
Radio	FCC Part 15 C RSS-210 EN 300 328
Environmental:	EN 60068 (IEC 68)

*See "Regulatory Notices" for conditions of operation.

System Requirements

Operating Systems

The Router will support the following Operating Systems:

- Windows 98Se
- Windows NT 4.0
- Windows ME
- Windows 2000
- Windows XP
- Mac OS 8.5 or higher
- Unix

Ethernet Performance

The Router complies to the IEEE 802.3i, u and x specifications.

Cable Specifications

The Router supports the following cable types and maximum lengths:

- Category 3 (Ethernet) or Category 5 (Fast Ethernet or Dual Speed Ethernet) Twisted Pair — shielded and unshielded cable types.
- Maximum cable length of 100m (327.86 ft).

C SAFETY INFORMATION

Important Safety Information

***WARNING**: Warnings contain directions that you must follow for your personal safety. Follow all directions carefully.*
You must read the following safety information carefully before you install or remove the unit:

***WARNING**: The Router generates and uses radio frequency (rf) energy. In some environments, the use of rf energy is not permitted. The user should seek local advice on whether or not rf energy is permitted within the area of intended use.*

***WARNING**: Exceptional care must be taken during installation and removal of the unit.*

***WARNING**: To ensure compliance with international safety standards, only use the power adapter that is supplied with the unit.*

***WARNING**: The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.*

***WARNING**: This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.*

***WARNING**: There are no user-replaceable fuses or user-serviceable parts inside the Router. If you have a physical problem with the unit that cannot be solved with problem solving actions in this guide, contact your supplier.*

***WARNING**: Disconnect the power adapter before moving the unit.*

WARNING: RJ-45 ports. *These are shielded RJ-45 data sockets. They cannot be used as telephone sockets. Only connect RJ-45 data connectors to these sockets.*

Wichtige Sicherheitshinweise

VORSICHT: *Warnhinweise enthalten Anweisungen, die Sie zu Ihrer eigenen Sicherheit befolgen müssen. Alle Anweisungen sind sorgfältig zu befolgen.*
Sie müssen die folgenden Sicherheitsinformationen sorgfältig durchlesen, bevor Sie das Geräts installieren oder ausbauen:

VORSICHT: *Der Router erzeugt und verwendet Funkfrequenz (RF). In manchen Umgebungen ist die Verwendung von Funkfrequenz nicht gestattet. Erkundigen Sie sich bei den zuständigen Stellen, ob die Verwendung von Funkfrequenz in dem Bereich, in dem der Bluetooth Access Point eingesetzt werden soll, erlaubt ist.*

VORSICHT: *Bei der Installation und beim Ausbau des Geräts ist mit höchster Vorsicht vorzugehen.*

VORSICHT: *Aufgrund von internationalen Sicherheitsnormen darf das Gerät nur mit dem mitgelieferten Netzadapter verwendet werden.*

VORSICHT: *Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.*

VORSICHT: *Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 60950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.*

VORSICHT: *Es sind keine von dem Benutzer zu ersetzende oder zu wartende Teile in dem Gerät vorhanden. Wenn Sie ein Problem mit dem Router haben, das nicht mittels der Fehleranalyse in dieser Anleitung behoben werden kann, setzen Sie sich mit Ihrem Lieferanten in Verbindung.*

VORSICHT: *Vor dem Ausbau des Geräts das Netzadapterkabel herausziehen.*

VORSICHT: RJ-45-Anschlüsse. *Dies sind abgeschirmte RJ-45-Datenbuchsen. Sie können nicht als Telefonanschlußbuchsen verwendet werden. An diesen Buchsen dürfen nur RJ-45-Datenstecker angeschlossen werden.*

Consignes importantes de sécurité

AVERTISSEMENT: *Les avertissements présentent des consignes que vous devez respecter pour garantir votre sécurité personnelle. Vous devez respecter attentivement toutes les consignes.*
Nous vous demandons de lire attentivement les consignes suivantes de sécurité avant d'installer ou de retirer l'appareil:

AVERTISSEMENT: *La Router fournit et utilise de l'énergie radioélectrique (radio fréquence -rf). L'utilisation de l'énergie radioélectrique est interdite dans certains environnements. L'utilisateur devra se renseigner sur l'autorisation de cette énergie dans la zone prévue.*

AVERTISSEMENT: *Faites très attention lors de l'installation et de la dépose du groupe.*

AVERTISSEMENT: *Pour garantir le respect des normes internationales de sécurité, utilisez uniquement l'adaptateur électrique remis avec cet appareil.*

AVERTISSEMENT: *La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.*

AVERTISSEMENT: *L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme CEI 60950. Ces*

conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.

AVERTISSEMENT: *Il n'y a pas de parties remplaceables par les utilisateurs ou entretenues par les utilisateurs à l'intérieur du moyeu. Si vous avez un problème physique avec le moyeu qui ne peut pas être résolu avec les actions de la résolution des problèmes dans ce guide, contacter votre fournisseur.*

AVERTISSEMENT: *Débranchez l'adaptateur électrique avant de retirer cet appareil.*

AVERTISSEMENT: Ports RJ-45. *Il s'agit de prises femelles blindées de données RJ-45. Vous ne pouvez pas les utiliser comme prise de téléphone. Branchez uniquement des connecteurs de données RJ-45 sur ces prises femelles.*

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SEVERABILITY: In the event any provision of this Agreement is found to be invalid, illegal or unenforceable, the validity, legality and enforceability of any of the remaining provisions shall not in any way be affected or impaired and a valid, legal and enforceable provision of similar intent and economic impact shall be substituted therefor.

ENTIRE AGREEMENT: This Agreement sets forth the entire understanding and agreement between you and 3Com and supersedes all prior agreements, whether written or oral, with respect to the Software and Documentation, and may be amended only in a writing signed by both parties.

Should you have any questions concerning this Agreement or if you desire to contact 3Com for any reason, please contact the 3Com subsidiary serving your country, or write:

3Com Corporation, 350 Campus Drive, Marlborough, MA. USA 01752-3064

E Obtaining Support for Your Product

Register Your Product

Warranty and other service benefits start from the date of purchase, so it is important to register your product quickly to ensure you get full use of the warranty and other service benefits available to you.

Warranty and other service benefits are enabled through product registration. Register your product at **http://eSupport.3com.com/**. 3Com eSupport services are based on accounts that you create or have authorization to access. First time users must apply for a user name and password that provides access to a number of eSupport features including Product Registration, Repair Services, and Service Request. If you have trouble registering your product, please contact 3Com Global Services for assistance.

Purchase Value-Added Services

To enhance response times or extend warranty benefits, contact 3Com or your authorized 3Com reseller. Value-added services like 3Com Express℠ and Guardian℠ can include 24x7 telephone technical support, software upgrades, onsite assistance or advance hardware replacement. Experienced engineers are available to manage your installation with minimal disruption to your network. Expert assessment and implementation services are offered to fill resource gaps and ensure the success of your networking projects. More information on 3Com maintenance and Professional Services is available at **www.3com.com**.

Contact your authorized 3Com reseller or 3Com for a complete list of the value-added services available in your area.

Troubleshoot Online

You will find support tools posted on the 3Com Web site at **www.3com.com**.

3Com Knowledgebase helps you troubleshoot 3Com products. This query-based interactive tool is located at **http://knowledgebase.3com.com** and contains thousands of technical solutions written by 3Com support engineers.

Access Software Downloads

Software Updates are the bug fix/maintenance releases for the version of software initially purchased with the product. In order to access these Software Updates you must first register your product on the 3Com Web site at **http://eSupport.3com.com/**

First time users will need to apply for a user name and password. A link to software downloads can be found at **http://eSupport.3com.com/**, or under the Product Support heading at **www.3com.com**.

Software Upgrades are the feature releases that follow the software version included with your original product. In order to access upgrades and related documentation you must first purchase a service contract from 3Com or your reseller.

Telephone Technical Support and Repair

To enable telephone support and other service benefits, you must first register your product at **http://eSupport.3com.com/**

Warranty and other service benefits start from the date of purchase, so it is important to register your product quickly to ensure you get full use of the warranty and other service benefits available to you.

When you contact 3Com for assistance, please have the following information ready:

- Product model name, part number, and serial number
- Proof of purchase, if you have not pre-registered your product
- A list of system hardware and software, including revision level
- Diagnostic error messages
- Details about recent configuration changes, if applicable

To send a product directly to 3Com for repair, you must first obtain a return authorization number (RMA). Products sent to 3Com, without authorization numbers clearly marked on the outside of the package, will be returned to the sender unopened, at the sender's expense. If your product is registered and under warranty, you can obtain an RMA number online at **`http://eSupport.3com.com/`**. First time users will need to apply for a user name and password.

Contact Us

3Com offers telephone, e-mail and internet access to technical support and repair services. To access these services for your region, use the appropriate telephone number, URL or e-mail address from the list below.

Telephone numbers are correct at the time of publication. Find a current directory of contact information posted on the 3Com Web site at **`http://csoweb4.3com.com/contactus/`**

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim Telephone Technical Support and Repair			
Australia	1 800 678 515	Philippines	1235 61 266 2602 or 1800 1 888 9469
Hong Kong	800 933 486		
India	+61 2 9424 5179 or 000800 650 1111	P.R. of China	800 810 3033
		Singapore	800 6161 463
Indonesia	001 803 61009	S. Korea	080 333 3308
Japan	00531 616 439 or 03 3507 5984	Taiwan	00801 611 261
		Thailand	001 800 611 2000
Malaysia	1800 801 777		
New Zealand	0800 446 398		
Pakistan	+61 2 9937 5083		
You can also obtain support in this region using the following e-mail: **`apr_technical_support@3com.com`**			
Or request a repair authorization number (RMA) by fax using this number:			+ 65 543 6348
Europe, Middle East, and Africa Telephone Technical Support and Repair			
From anywhere in these regions, call:	+44 (0)1442 435529		
From the following countries, you may use the numbers shown:			

Country	Telephone Number	Country	Telephone Number
Austria	0800 297 468	Luxembourg	800 23625
Belgium	0800 71429	Netherlands	0800 0227788
Denmark	800 17309	Norway	800 11376
Finland	0800 113153	Poland	00800 4411 357
France	0800 917959	Portugal	800 831416
Germany	0800 182 1502	South Africa	0800 995 014
Hungary	06800 12813	Spain	900 938 919
Ireland	1 800 553 117	Sweden	020 795 482
Israel	1800 945 3794	Switzerland	0800 553 072
Italy	800 879489	U.K.	0800 096 3266

You can also obtain support in this region using the following URL:
http://emea.3com.com/support/email.html

Latin America Telephone Technical Support and Repair

Antigua Barbuda	AT&T +800 988 2112	Guadalupe	AT&T +800 998 2112
Argentina Local Number	54 11 5556 3200	Guatemala	AT&T +800 998 2112
Argentina	0 810 444 3COM	Guyana	AT&T +800 998 2112
Argentina	810 44 32 66	Haiti	AT&T +800 998 2112
Aruba	AT&T +800 998 2112	Honduras	AT&T +800 998 2112
Bahamas	AT&T +800 998 2112	Jamaica	AT&T +800 998 2112
Barbados	AT&T +800 998 2112	Mexico Local Number	52 55 52 01 00 04
Belize	AT&T +800 998 2112	Mexico	01 800 849CARE
Bermuda	AT&T +800 998 2112	Mexico	01 800 849 2273
Bolivia	AT&T +800 998 2112	Monserrat	AT&T +800 998 2112
Brazil Local Number	55 11 5643 2700	Nicaragua	AT&T +800 998 2112
Brazil	800 133 266	Panama	AT&T +800 998 2112
British Virgin Islands	AT&T +800 998 2112	Paraguay	AT&T +800 998 2112
Cayman Islands	AT&T +800 998 2112	Peru	AT&T +800 998 2112
Chile	AT&T +800 998 2112	Puerto Rico	AT&T +800 998 2112
Columbia Local Number	57 1 592 5000	Saba Anquila	AT&T +800 998 2112
Colombia	800 011 3266	St. Kitts Neives	AT&T +800 998 2112
Costa Rica	AT&T +800 998 2112	St. Lucia	AT&T +800 998 2112
Curacao	AT&T +800 998 2112	St. Vincent	AT&T +800 998 2112
Dominica	AT&T +800 998 2112	Suriname	AT&T +800 998 2112
Dominique	AT&T +800 998 2112	Trinidad and Tobago	AT&T +800 998 2112
Equador	AT&T +800 998 2112	Turks and Caycos	AT&T +800 998 2112
El Salvador	AT&T +800 998 2112	Uruguay - Montevideo	AT&T +800 998 2112
French Guiana	AT&T +800 998 2112	Venezuela	AT&T +800 998 2112
Grenada	AT&T +800 998 2112	Virgin Islands	AT&T +800 998 2112

You can also obtain support in this region using the following:

Spanish speakers, enter the URL:
http://lat.3com.com/lat/support/form.html

Portuguese speakers, enter the URL:
http://lat.3com.com/br/support/form.html

English speakers in Latin America should send e-mail to:
lat_support_anc@3com.com

Country	Telephone Number	Country	Telephone Number
US and Canada Telephone Technical Support and Repair			
	1 800 876 3266		

GLOSSARY

802.11b The IEEE specification for wireless Ethernet which allows speeds of up to 11 Mbps. The standard provides for 1, 2, 5.5 and 11 Mbps data rates. The rates will switch automatically depending on range and environment.

802.11g The IEEE specification for wireless Ethernet which allows speeds of up to 54 Mbps. The standard provides for 6, 12, 24, 36, 48 and 54 Mbps data rates. The rates will switch automatically depending on range and environment.

10BASE-T The IEEE specification for 10 Mbps Ethernet over Category 3, 4 or 5 twisted pair cable.

100BASE-TX The IEEE specification for 100 Mbps Fast Ethernet over Category 5 twisted-pair cable.

Access Point An access point is a device through which wireless clients connect to other wireless clients and which acts as a bridge between wireless clients and a wired network, such as Ethernet. Wireless clients can be moved anywhere within the coverage area of the access point and still connect with each other. If connected to an Ethernet network, the access point monitors Ethernet traffic and forwards appropriate Ethernet messages to the wireless network, while also monitoring wireless client radio traffic and forwarding wireless client messages to the Ethernet LAN.

Ad Hoc mode Ad Hoc mode is a configuration supported by most wireless clients. It is used to connect a peer to peer network together without the use of an access point. It offers lower performance than infrastructure mode, which is the mode the router uses. (see also Infrastructure mode.)

Auto-negotiation Some devices in the range support auto-negotiation. Auto-negotiation is where two devices sharing a link, automatically configure to use the best common speed. The order of preference (best first) is: 100BASE-TX full duplex, 100BASE-TX half duplex, 10BASE-T full duplex, and 10BASE-T half duplex. Auto-negotiation is defined in the IEEE 802.3 standard for Ethernet and is an operation that takes place in a few milliseconds.

Bandwidth The information capacity, measured in bits per second, that a channel can transmit. The bandwidth of Ethernet is 10 Mbps, the bandwidth of Fast Ethernet is 100 Mbps. The bandwidth for 802.11b wireless is 11Mbps.

Category 3 Cables One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-586 standard. Category 3 is voice grade cable and can only be used in Ethernet networks (10BASE-T) to transmit data at speeds of up to 10 Mbps.

Category 5 Cables One of five grades of Twisted Pair (TP) cabling defined by the EIA/TIA-586 standard. Category 5 can be used in Ethernet (10BASE-T) and Fast Ethernet networks (100BASE-TX) and can transmit data up to speeds of 100 Mbps. Category 5 cabling is better to use for network cabling than Category 3, because it supports both Ethernet (10 Mbps) and Fast Ethernet (100 Mbps) speeds.

Channel Similar to any radio device, the Wireless Cable/DSL router allows you to choose different radio channels in the wireless spectrum. A channel is a particular frequency within the 2.4GHz spectrum within which the Router operates.

Client The term used to describe the desktop PC that is connected to your network.

DHCP Dynamic Host Configuration Protocol. This protocol automatically assigns an IP address for every computer on your network. Windows 95, Windows 98 and Windows NT 4.0 contain software that assigns IP addresses to workstations on a network. These assignments are made by the DHCP server software that runs on Windows NT Server, and Windows 95 and Windows 98 will call the server to obtain the address. Windows 98 will allocate itself an address if no DHCP server can be found.

DNS Server Address DNS stands for Domain Name System, which allows Internet host computers to have a domain name (such as 3com.com) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "3com.com" into your Internet browser), the user is sent to the proper IP address. The DNS server address used by the computers on your home network is the location of the DNS server your ISP has assigned.

DSL modem DSL stands for digital subscriber line. A DSL modem uses your existing phone lines to send and receive data at high speeds.

Encryption A method for providing a level of security to wireless data transmissions. The Router uses two levels of encryption; 40/64 bit and 128 bit. 128 bit is a more powerful level of encryption than 40/64 bit.

ESSID Extended Service Set Identifier. The ESSID is a unique identifier for your wireless network. You must have the same ESSID entered into the Router and each of it's wireless clients.

Ethernet A LAN specification developed jointly by Xerox, Intel and Digital Equipment Corporation. Ethernet networks use CSMA/CD to transmit packets at a rate of 10 Mbps over a variety of cables.

Ethernet Address See MAC address.

Fast Ethernet An Ethernet system that is designed to operate at 100 Mbps.

Firewall Electronic protection that prevents anyone outside of your network from seeing your files or damaging your computers.

Full Duplex A system that allows packets to be transmitted and received at the same time and, in effect, doubles the potential throughput of a link.

Half Duplex A system that allows packets to transmitted and received, but not at the same time. Contrast with full duplex.

Hub A device that regenerates LAN traffic so that the transmission distance of that signal can be extended. Hubs are similar to repeaters, in that they connect LANs of the same type; however they connect more LANs than a repeater and are generally more sophisticated.

IEEE Institute of Electrical and Electronics Engineers. This American organization was founded in 1963 and sets standards for computers and communications.

IETF Internet Engineering Task Force. An organization responsible for providing engineering solutions for TCP/IP networks. In the network management area, this group is responsible for the development of the SNMP protocol.

Infrastructure mode Infrastructure mode is the wireless configuration supported by the Router. You will need to ensure all of your clients are set up to use infrastructure mode in order for them to communicate with the Access Point built into your Router. (see also Ad Hoc mode)

IP Internet Protocol. IP is a Layer 3 network protocol that is the standard for sending data through a network. IP is part of the TCP/IP set of protocols that describe the routing of packets to addressed devices. An IP address consists of 32 bits divided into two or three fields: a network number and a host number or a network number, a subnet number, and a host number.

IP Address Internet Protocol Address. A unique identifier for a device attached to a network using TCP/IP. The address is written as four octets separated with periods (full-stops), and is made up of a network section, an optional subnet section and a host section.

IPsec IP Security. Provides IP network-layer encryption. IPSec can support large encryption networks (such as the Internet) by using digital certificates for device authentication. When setting up an IPSec connection between two devices, make sure that they support the same encryption method.

ISP Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

LAN Local Area Network. A network of end stations (such as PCs, printers, servers) and network devices (hubs and switches) that cover a relatively small geographic area (usually not larger than a floor or building). LANs are characterized by high transmission speeds over short distances (up to 1000 metres).

MAC Media Access Control. A protocol specified by the IEEE for determining which devices have access to a network at any one time.

MAC Address Media Access Control Address. Also called the hardware or physical address. A Layer 2 address associated with a particular network device. Most devices that connect to a LAN have a MAC address assigned to them as they are used to identify other devices in a network. MAC addresses are 6 bytes long.

NAT Network Address Translation. NAT enables all the computers on your network to share one IP address. The NAT capability of the Router allows you to access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Network A network is a collection of computers and other computer equipment that is connected for the purpose of exchanging information or sharing resources. Networks vary in size, some are within a single room, others span continents.

Network Interface Card (NIC) A circuit board installed into a piece of computing equipment, for example, a computer, that enables you to connect it to the network. A NIC is also known as an adapter or adapter card.

Protocol A set of rules for communication between devices on a network. The rules dictate format, timing, sequencing and error control.

PPPoE Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a method of data transmission originally created for dial-up connections; PPPoE is for Ethernet connections.

PPTP Point-to-Point Tunneling Protocol is a method of secure data transmission between two remote sites over the Internet.

RJ-45 A standard connector used to connect Ethernet networks. The "RJ" stands for "registered jack".

Router A device that acts as a central hub by connecting to each computer's network interface card and managing the data traffic between the local network and the Internet.

Server A computer in a network that is shared by multiple end stations. Servers provide end stations with access to shared network services such as computer files and printer queues.

SSID Service Set Identifier. Some vendors of wireless products use SSID interchangeably with ESSID.

Subnet Address An extension of the IP addressing scheme that allows a site to use a single IP network address for multiple physical networks.

Subnet Mask A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers configured like an IP address. It is used to create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must assigned by InterNIC).

Subnets A network that is a component of a larger network.

Switch A device that interconnects several LANs to form a single logical LAN that comprises of several LAN segments. Switches are similar to bridges, in that they connect LANs of a different type; however they connect more LANs than a bridge and are generally more sophisticated.

TCP/IP Transmission Control Protocol/Internet Protocol. This is the name for two of the most well-known protocols developed for the interconnection of networks. Originally a UNIX standard, TCP/IP is now supported on almost all platforms, and is the protocol of the Internet.

TCP relates to the content of the data travelling through a network — ensuring that the information sent arrives in one piece when it reaches its destination. IP relates to the address of the end station to which data is being sent, as well as the address of the destination network.

Traffic The movement of data packets on a network.

Universal Plug and Play Universal Plug and Play is a system which allows compatible applications to read some of their settings from the Router. This allows them to automatically configure some, or all, of their settings and need less user configuration.

URL Filter A URL Filter is a feature of a firewall that allows it to stop its clients form browsing inappropriate Web sites.

WAN Wide Area Network. A network that connects computers located in geographically separate areas (for example, different buildings, cities, or countries). The Internet is an example of a wide area network.

WDS Wireless Distribution System. WDS enables one or more access points to rebroadcast received signals to extend range and reach, though this can affect the overall throughput of data.

WECA Wireless Ethernet Compatibility Alliance. An industry group formed to certify cross vendor interoperability and compatibility of 802.11b and 802.11g wireless networking products and to promote the standard for enterprise, small business and home environments. (see also 802.11b, 802.11g, Wi-Fi)

WEP Wired Equivalent Privacy. A shared key encryption mechanism for wireless networking. Encryption strength is 40/64 bit or 128 bit.

Wi-Fi Wireless Fidelity. This is the certification granted by WECA to products that meet their interoperability criteria. (see also 802.11b, WECA)

Wireless Client The term used to describe a desktop or mobile PC that is wirelessly connected to your wireless network.

Wireless LAN Service Area Another term for ESSID (Extended Service Set Identifier).

Wizard A Windows application that automates a procedure such as installation or configuration.

WLAN Wireless Local Area Network. A WLAN is a group of computers and devices connected together by wireless in a relatively small area (such as a house or office).

WPA Wi-Fi Protected Access. A dynamically changing encryption mechanism for wireless networking. Encryption strength is 256 bit.

Regulatory Notices

For The OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router

General Statements

The 3Com OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router (WL-552) must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

This product contains encryption. It is unlawful to export out of the U.S. without obtaining a U.S. Export License.

This product does not contain any user serviceable components. Any unauthorized product changes or modifications will invalidate 3Com's warranty and all applicable regulatory certifications and approvals.

This product can only be used with the supplied antenna(s).

Exposure to Radio Frequency Radiation

This device generates and radiates radio-frequency energy. In order to comply with FCC radio-frequency exposure guidelines for an uncontrolled environment, this equipment must be installed and operated while maintaining a minimum body to antenna distance of 20 cm (approximately 8 in.).

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website www.hc-sc.gc.ca/rpb.

This product must maintain a minimum body to antenna distance of 20 cm. Under these conditions this product will meet the Basic Restriction limits of 1999/519/EC [Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)].

US - Radio Frequency Requirements

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

US Federal Communications Commission (FCC) EMC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:
The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402.
Stock No. 004-000-0034504.

3Com is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this 3Com OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router (WL-552), or the substitution or attachment of connecting cables and equipment other than specified by 3Com.

The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment.

US Manufacturer's FCC Declaration of Conformity

3Com Corporation
350 Campus Drive
Marlborough, MA 01752-3064, USA
(508) 323-5000
Date: March 8, 2006

Declares that the Product:

Brand Name: 3Com Corporation
Model Number: WL-552
Equipment Type: 3Com OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router

Complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FC	3Com OfficeConnect ADSL Wireless 54Mbps 11g Firewall Router Model WL-552

Industry Canada - RF Compliance

This device complies with RSS 210 of Industry Canada.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

L ' utilisation de ce dispositif est autorisee seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l' utilisateur du dispositif doit etre pret a accepter tout brouillage radioelectrique recu, meme si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

The term "IC" before the equipment certification number only signifies that the Industry Canada technical specifications were met.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication. To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Pour empecher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit etre utilize a l'interieur et devrait etre place loin des fenetres afin de Fournier un ecram de blindage maximal. Si le matriel (ou son antenne d'emission) est installe a l'exterieur, il doit faire l'objet d'une licence.

Industry Canada - Emissions Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de Conformité à la Réglementation d'Industrie Canada

Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

Safety Compliance Notice

This device has been tested and certified according to the following safety standards and is intended for use only in Information Technology Equipment which has been tested to these or other equivalent standards:

- UL Standard 60950-1
- CAN/CSA C22.2 No. 60950-1
- IEC 60950-1
- EN 60950-1

EU Compliance

CE ①

Usage restrictions apply.
See documentation

For connection to ADSL networks

This equipment may be operated in:

AT	BE	CY	CZ	DK	EE	FI	FR
DE	GR	HU	IE	IT	LV	LT	LU
MT	NL	PL	PT	SK	SI	ES	SE
GB	IS	LI	NO	CH	BG	RO	TR

Intended use: ADSL 802.11g/b Firewall Router

For connection to ADSL networks

NOTE: To ensure product operation is in compliance with local regulations, select the country in which the product is installed. Refer to 3CRWDR101A-75 User Guide.

Česky [Czech]	*3Com Coporation* tímto prohlašuje, ze tento *RLAN device* je ve shodě se základními pozadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede *3Com Corporation* erklærer herved, at følgende udstyr *RLAN device* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt *3Com Corporation*, dass sich das Gerät *RLAN device* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab *3Com Corporation* seadme *RLAN device* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, *3Com Corporation,* declares that this *RLAN device* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente *3Com Corporation* declara que el *RLAN device* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *3Com Corporation* ΔΗΛΩΝΕΙ ΟΤΙ *RLAN device* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French]	Par la présente *3Com Corporation* déclare que l'appareil *RLAN device* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente *3Com Corporation* dichiara che questo *RLAN device* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *3Com Corporation* deklarç, ka *RLAN device* atbilst Direktîvas 1999/5/EK bûtiskajâm prasîbâm un citiem ar to saistîtajiem noteikumiem.
Lietuviø [Lithuanian]	Šiuo *3Com Corporation* deklaruoja, kad šis *RLAN device* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Nederlands [Dutch]	Hierbij verklaart *3Com Corporation* dat het toestel *RLAN device* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, *3Com Corporation*, jiddikjara li dan *RLAN device* jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, *3Com Corporation* nyilatkozom, hogy a *RLAN device* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish]	Niniejszym *3Com Corporation* oświadcza, że *RLAN device* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	*3Com Corporation* declara que este *RLAN device* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	*3Com Corporation* izjavlja, da je ta *RLAN device* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	*3Com Corporation* týmto vyhlasuje, ze *RLAN device* spĺňa základné poziadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	*3Com Corporation* vakuuttaa täten että *RLAN device* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

A copy of the signed Declaration of Conformity can be downloaded from the Product Support web page for the 3Com OfficeConnect ADSL Wireless 54 Mbps 11g Firewall Router at http://www.3Com.com.
Also available at http://support.3com.com/doc/WL-552_EU_DOC.pdf.

EU - Restrictions for Use in the 2.4GHz band

This device may be operated indoors in all countries of the European Community using the 2.4GHz band: Channels 1 - 13, except where noted below.

- In Italy the end-user must apply for a license from the national spectrum authority to operate this device outdoors.
- In Belgium outdoor operation is only permitted using the 2.46 - 2.4835 GHz band: Channel 13.
- In France outdoor operation is only permitted using the 2.4 - 2.454 GHz band: Channels 1 - 7.

Brazil RF Compliance

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não causar interferência a sistema operando em caráter primário.

DGT Statement

注意！

依據 低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機， 非經許可， 公司 商號或使用者均不得擅自變更頻率，加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信； 經發現有干擾現象時，應立即停用， 並改善至無干擾時方得繼續使用。

前項合法通信，指依電信規定作業之無線電信。 低功率射頻電機須忍受合法通信或工業， 科學及醫療用電波輻射性電機設備之干擾。

RTTE01:

1. 本機限在不干擾合法電台與不受被干擾保障條件下於室內使用

2. 爲減少電波干擾，請妥適使用

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